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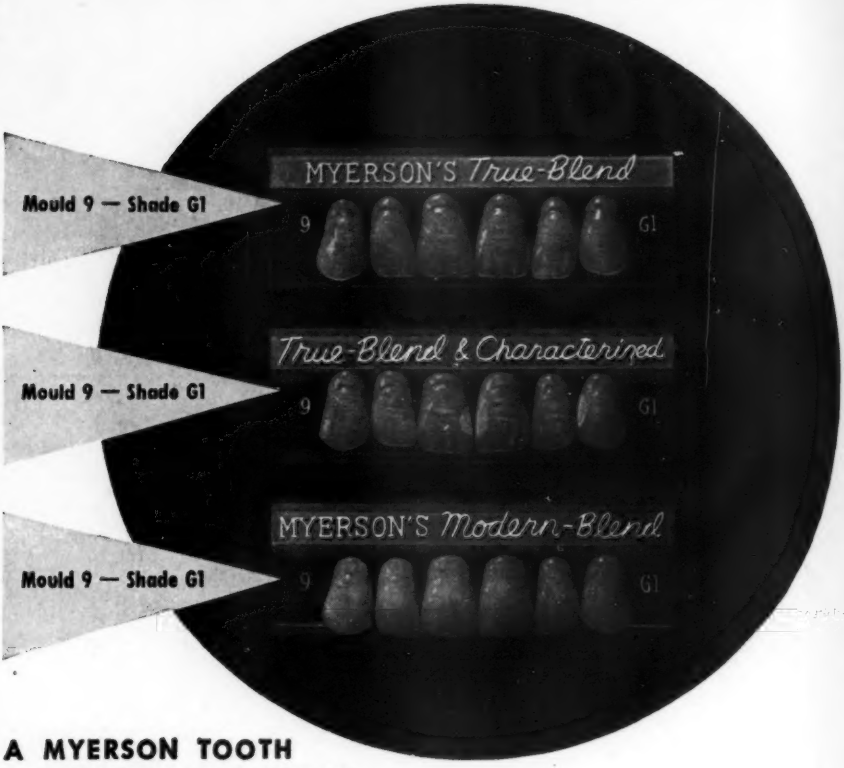

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THE Journal OF THE
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DENTAL EDUCATION AND THE FUTURE OF DENTISTRY

Russell W. Bunting, D.D.Sc., Ann Arbor, Mich.

THE present unprecedented interest in dentistry and the entrance of thousands of returned veterans into dental education are of great significance not only to schools but to the future of dentistry as well. They indicate a new era of higher appreciation of dentistry as a profession, and they afford to schools the opportunity to elevate the standards of dental education and practice by proper selection of incoming students. As an educational administrator, who has had personal contact with some of these trends, I am impelled to call attention to certain present day developments and their implications.

Low Enrollments in Past

During the past twenty years the dental schools of this country, with few exceptions, have not been filled to their maximum capacity. Although medical schools have had annually five to ten times the number of applicants they could accommodate, the aspirants to dentistry were pitifully few. As a result the privilege of selection of students with high scholastic standings and full qualifications for admission to professional study, which has been exercised by medicine, has been denied to dentistry. For the latter it has been necessary to admit every applicant who had the minimum preprofessional requirements, and in many schools which were dependent on student enrollment and student fees for existence it has been necessary to admit many with substandard records and questionable scholastic ability. Such procedure inevitably must be reflected in the standards of dental education and the caliber of the graduates who take their places in professional life and service.

That is not to say that during these years all dental graduates have been of poor quality, for many outstanding and highly qualified practitioners have been produced. But there have been too many who have not been so well qualified and too many who have been incompetent and should never have been admitted to any profession. The general level of dentistry has thereby been definitely lowered. For this the fault lies not so much with the dental schools as with the conditions which deprived them of a suffi-

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cient number of well qualified candidates from which to select the student body.

During these years American youth had but little interest in dentistry and less information as to the opportunities it afforded as a profession. Few applicants came from the older universities, and few had attained high scholastic achievement in their academic careers. Almost invariably the better students gravitated or were directed to medicine, law or the sciences, and only those less competent signified any interest in the study of dentistry. This was the source of much concern to dental educators during those years, and many attempts were made to bring the challenge of dentistry to the attention of honor students in high schools and colleges but the efforts met with indifferent success.

Postwar Increase in Enrollment

Today, almost overnight, as the result of the postwar readjustment, the situation has been markedly changed. Dental schools are deluged by applicants for admission. So great has been the demand that most schools were forced to close their doors to new students long before the opening of the 1946 and 1947 sessions. This almost revolutionary change in attitude toward and interest in dental education is most significant.

The question naturally arises, why has this change occurred? There are probably many factors involved. First, and perhaps most important, is the fact that veterans may now engage in professional study under partial governmental support. This aid has afforded the opportunity to study dentistry to many youths who otherwise could not afford to do so. The G.I. educational benefits have provided the means, but they do not entirely account for the increased interest in and demand for dental education, since the veteran has free choice of all branches of education. Why the sudden interest in dentistry?

Indirectly, the war has been largely responsible. Previous to the war only 25 per cent of the people availed themselves of the benefits of adequate dental service. During the early days of recruiting, crippling dental defects accounted for the highest number of rejections from service because of physical unfitness, indicating a general lack of dental attention. Later the policy was changed, and all recruits were afforded necessary dental service by the Army and Navy Dental Corps. As a result, many thousands of young men received dental care for the first time in their lives and learned to appreciate the benefits of such service. Now that they are home as discharged veterans, they will seek to obtain dental care for themselves and their families. The resultant increased demand for dental service and the lack of manpower to provide it have been sufficiently publicized to call the attention of the veteran to dentistry as one profession in which there is an unlimited demand for recruits. In casting about among the various professions, the veteran found many which definitely were not understaffed and which, in all probability, will be overcrowded in the near future. Dentistry offers to him the greatest demand for his services and the greatest freedom for development.

Furthermore, in spite of all the criticisms leveled against them, the Dental Corps of the Army and Navy have made a creditable showing during the war and have served to present dentistry in a much more favorable light to the men in service. There is evidence that veterans have a more serious appreciation of dentistry as an important public health service. This interest has come not so much from the organization or the efficiency of the dental corps themselves as from the performance and the capacities of the individual dentist in service. Many officers worked long and faithfully in dental clinics caring for thousands of the enlisted personnel.

There were many others who did little dental work but instead assisted medical corpsmen in first aid stations on the field and in the operating rooms in hospitals where they exhibited high degrees of skill. Medical officers with whom they were associated have been profuse in their praise of the abilities and the resourcefulness of dentists in the field of general as well as oral surgery.

Many veterans who previous to the war held academic and other professional degrees with high scholastic standings are now turning to dentistry as a profession. There is no evidence that before the war they had any interest whatsoever in the study or practice of dentistry. When asked why they changed their life objectives during the war, they usually reply that they had been impressed by the activities of some dental officer with whom they had been associated in the service.

It is also noticed that veterans who since their discharge have been enrolled in liberal arts colleges for the purpose of completing their predental requirements have maintained a uniformly high scholastic level. Many who previous to the war had poor scholastic records are now earning all A and B grades. Their seriousness of purpose and their determination to succeed are setting new and higher levels of educational achievement. Since in the incoming classes veterans will constitute the majority, it is reasonable to expect that the standards of dental teaching and learning will be raised markedly in the immediate future.

Selection of Students

In all planning for a widening of the benefits of health service for a larger number of persons it has become more and more evident that dentistry must assume greater and greater obligations. No longer is the sphere of dentistry confined to the four walls of a professional office but rather it is being extended to the general health activities of the state and the nation, and individual exponents of the dental profession are playing an important part in the world economy.

It is reasonable to expect that these broadening interests and responsibilities will continue, and to meet these opportunities every effort should be made to create a type of personnel that can measure up to these challenges to the dental profession. In this, the schools of this country can play an important role, since a sufficient pool of applicants is now provided so that a wise selection of the well prepared and highly qualified matriculants can be made. As a result the quality and the capability of the student personnel may be definitely raised in all the schools. During this period of increased demand it will not be necessary to admit the poorly qualified or the ill prepared applicants.

Aptitude Tests

The Council on Dental Education of the American Dental Association has, during the past year, set up a committee charged with the duty of establishing mental and manual aptitude tests to measure the capacity of dental students. The study has been organized and promises to be of value when completed. At present, however, it is not available for the selection of incoming students. Many schools, in view of the large number of applicants for the limited number of available places, are employing the Graduate Record Examination as a guide in their selection of students. This examination should be especially useful in the selection of students coming from colleges in which the educational standards are not high and the significance of scholastic records may be questioned.

The fact that the majority of students will be veterans, who will be more earnest and zealous in the pursuit of their education than were the students of previous years, should set new standards

of accomplishment and scholastic endeavor. Not only will the average dental student be better qualified but also he will make better use of the opportunities afforded in dental education. The final result should be graduates who will be able to represent and project the highest ideals of dental service and practice—a new order of young dentists who will build a new order of dental service.

Advanced Study

The present interest and activity in continuing education in dentistry are highly significant. Dentists everywhere are becoming conscious of their need for advanced study in the various fields of their profession, and great demands are being made for postgraduate and graduate education. Especially is this true of the returned veteran who, before reentering his practice, desires the benefits of refresher courses or seeks to qualify in one of the specialties of dentistry.

More and more schools are offering courses in postgraduate training, as is revealed by a recent survey.[1] Undoubtedly the demand for these courses exceeds the capacity of all schools to accommodate. This interest in postgraduate training is a salutary sign. It indicates a realization on the part of the dental profession that there is need for individual growth and development in order to keep in step with the advancement of the knowledge and skills in dentistry. It also presages a general elevation of the profession and a raising of the standard of present and future dental practice.

Added to these developments are the recent advancements in dental research which have attracted wide attention in the fields of public health. The promise which is given of ultimate attainment of methods of disease prevention has aroused the interest of the public at large and has brought dentistry greater appreciation and respect.

Future Plans

All these considerations point to a renaissance in dental education and practice that will prevail in the immediate future. If dentistry utilizes its new opportunities wisely, this present trend can be consolidated into a permanent improvement of the profession. It may be that this interest in dental education is but a transitory phase predicated on the G.I. benefits and that when these benefits are no longer available the interest and the demand will recede to former levels. Present indications support the view that the veterans' educational demands under governmental support will continue in full force until 1949 or 1950. Between now and 1950 the increased undergraduate and postgraduate activities should produce an impact on dentistry and the public which will have its permanent effects.

These gains should not be relinquished. Undoubtedly the present increased interest in dentistry will prevail as long as there is a demand for increased personnel to meet the public needs. With the present high average age of dentists, with the high rate of shrinkage in the number of dentists owing to retirement and death and with the lean years of enrollment during the war, it will be a long time before there will be an adequate supply of dentists even though all schools continue at their full enrollment.

When the G.I. benefits have been exhausted, there undoubtedly will be a marked falling off in dental school enrollment unless other forms of governmental subsidy of dental education are provided. This decrease will be due not so much to the lack of demand for dental training as to the high cost of dental education and the inability of many well qualified young men to undertake it. Plans should be laid for that eventuality

1. Graduate, Postgraduate and Refresher Courses Offered by the Dental Schools and by the War and Navy Departments, 1946-1947. *J.A.D.A.* 33:1319 (October 1) 1946.

by the provision of an adequate number of scholarships to aid worthy aspirants to study dentistry. These may be financed by private philanthropic enterprise or by public funds.

In the past the progress of dentistry has been hampered by two considerations: (1) a lack of appreciation on the part of the highly gifted and well trained students for the opportunities which lie in the study and practice of dentistry and (2) the high cost of dental education that has been prohibitive to many who desired to enter dental school. During the next few years both of these restrictions will be removed, and a new era will prevail in this field. Every effort should be made by dental schools to take full advantage of the new situation. Selection of students should be wisely administered, the dental curriculum should be geared to higher and outstanding achievement and postgraduate instruction should be fostered by all possible means. Every practicing dentist should seek to improve his knowledge and skills in order to keep abreast of the rising tide of his profession. Finally, plans should be drawn soon to consolidate the gains of dentistry during this postwar period and to provide sufficient financial aid to assist outstanding students for whom the present veteran benefits will not be available.

Maintenance of High Standards

The foregoing discussion has been directed toward the elevation of the standards of dental education and an enhancement of the status of dental practice and service. Another vital present day issue is providing the manpower required to meet the needs of the public. If all the schools in this country accepted their maximum of enrollment, in four years the output of graduates would probably hold the total number of practicing dentists to about 75,000. This number should be easily reached during the postwar period, and with the opening of the two or three new dental schools which are being erected or planned at the present time this number should be slightly increased.

Many persons believe that this level of dental manpower will be adequate for the immediate and future needs, and they seriously doubt the wisdom of increasing the number of licensed practitioners to 100,000 or 125,000. This increase might create an economic overload which conceivably would have its repercussions in future years.

The present program of dentistry for children should greatly decrease the load of adult needs in the future. There are strong indications that in this generation practical means will be forthcoming of decreasing dental caries to 40 or 50 per cent of the present incidence. Thus the need for dental service at all ages would be materially decreased and 70,000 dentists would be able to provide adequate care for those who need it.

There is, then, no cogent reason that schools should accept so many students that the opportunities for high educational achievement are wholly subverted. The maintenance of high standards of professional education and professional service is more important than the attainment of greatly increased numbers. Dental practitioners of high quality will most adequately express the ideals of the profession and will adapt themselves most readily to the changing patterns of health service requirements.—*916 Church Street.*

DISSOLUTION OF TOOTH SUBSTANCE BY LEMON JUICE, ACID BEVERAGES AND ACIDS FROM SOME OTHER SOURCES

Edward C. Stafne, D.D.S., and Stanley A. Lovestedt, D.D.S., Rochester, Minn.

THIS paper deals mainly with some clinical observations of injury to the structure of teeth by acids from various sources and is prompted by the fact that a marked increase in the consumption of lemon juice in recent years has paralleled this destruction. Likewise the apparent significance of the action of acids from certain other sources on the structure of teeth has been recognized. Some clinical observations which bear on this subject are presented herein.

In instances wherein loss of structure is caused by acid solutions, four findings are of more or less common occurrence:

1. The teeth may be hypersensitive to thermal changes and hygroscopic substances. This may be a major complaint and is often the patient's primary reason for seeking the services of the dentist.

2. Often stain and stain lines are absent, which gives one the impression that measures of dental prophylaxis have been applied recently.

3. Defects in enamel produced by action of acid solutions usually have rounded margins while, in contrast, defects produced as a result of mechanical wear only have sharper margins.

4. A finding which probably is of greatest diagnostic value is the presence of fillings which project above the surfaces of the tooth.

Miller has shown that dental fillings tend to wear away as rapidly as does enamel in the event that the loss is produced by mechanical wear only, whereas when the teeth come in contact with acids, the enamel is worn away more rapidly than are fillings.[1] He also showed that mechanical wear is initiated and greatly accelerated when teeth are subjected to the action of acid solutions.

Obviously it is difficult clinically to evaluate the effects which a specified acid solution has had on the teeth of elderly persons, since such effects must be differentiated from those which have resulted, over a long period of time, from ingestion of other acid substances and from abrasion and wear. In young individuals one can establish, with a greater degree of certainty, a causal relationship in the event that there is evidence of loss or destruction of enamel, since any appreciable loss which occurs prior to ages in the early twenties rarely can be attributed solely to the effects of mechanical wear. Even in older persons, however, the cause for loss of enamel in specific cases frequently can be determined with a fair degree of certainty if the examiner will keep in mind the several differential points which have been described previously.

Lemon Juice

Etching and decalcification of the sub-

From the Section on Dental Surgery, Mayo Clinic.

1. Miller, W. D., Experiments and Observations on the Wasting of Tooth Tissue Variously Designated as Erosion, Abrasion, Chemical Abrasion, Denudation, etc. *D. Cosmos* 49:225 (March) 1907.

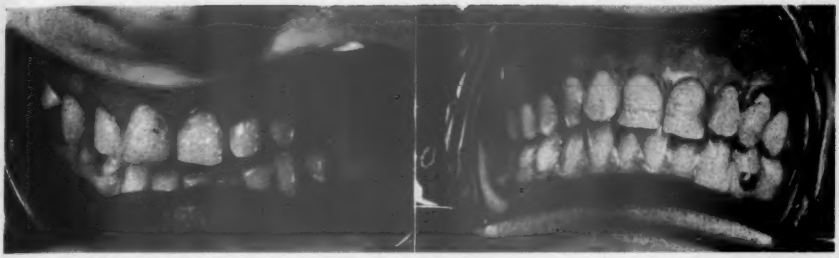

Fig. 1.—Left: Teeth of a woman, aged 27 years, who had drunk lemon juice in seltzer water for nearly two years. Greatest loss of enamel had occurred on upper central incisors, although etchings on several other teeth were present. Defects had been increasing in extent despite avoidance of vigorous brushing and use of abrasives and patient's efforts to learn the cause. Right: Teeth of a woman, aged 37 years, who had drunk lemon juice in water on arising for about three years. Marked etching of enamel of upper central incisors and appreciable loss of enamel on labial surfaces of upper lateral incisors had occurred. Patient was certain that defects had not been present three years prior to the time the photograph was made

stance of teeth produced by the action of lemons have been noted long since, but until recent years their occurrence in any appreciable amount was limited to certain peoples and geographic areas. Increased production and wider distribution of lemons and other citrous fruits have led to marked increase in their consumption; now they are available almost at all times. This, no doubt, has brought about a highly beneficial improvement in the diet, for citrous fruits are a relatively cheap, rich and convenient source of vitamin C. However, some habits and methods related to use of citrous fruits apparently have resulted in destructive effects on the teeth.

Persons in whom destruction of tooth substance, presumably by lemons, has been observed consist mainly of those who have sucked lemons and those who have taken lemon juice in water as an intended therapeutic measure (Figs. 1-3). The practice of sucking lemons can produce marked defects on the labial surfaces of the upper anterior teeth. Fortunately occurrence of such cases is not frequent and, therefore, relatively unimportant. By far the most insidious and prevalent way of taking lemon juice in cases in which destruction is found is use of interval feedings of the juice in water as an intended therapeutic measure. This solution is taken most frequently immediately on arising in the morning.

Of 50 patients who were using lemon juice as a therapeutic measure and who also showed evidence of dissolution of tooth structure, 39 were women and 11 were men, a ratio of approximately 4:1. The patients came from twenty-two states, two Canadian provinces, Mexico and Puerto Rico; this finding suggests that use of lemon juice as a therapeutic measure is widespread. There was also striking uniformity in the manner in which lemon juice was taken; namely, by interval feedings, in water, as has been mentioned. In almost all instances dental examination was incidental to general physical examination. In a few instances the presence of dental defects was a major complaint; these patients were seen primarily because of the dental complaint.

It is probably among persons who are seeking medical service, and particularly among those who are suffering from chronic illness, that the largest number of drinkers of lemon juice may be seen. Use of lemon juice was most common among persons who were suffering from rheumatism, according to results of the

study referred to in the preceding paragraph. The juice also was used for the treatment of constipation, to prevent and relieve colds and occasionally as a tonic. In some instances it was used as part of a reduction diet; in this event the juice most often replaced entire meals. In most instances patients were aware of the high vitamin C content of lemons and desired an adequate intake of that vitamin.

In the cases studied the degree and rapidity of decalcification undoubtedly varied from person to person even though lemon juice was taken in like quantities and under similar conditions. A marked degree of decalcification was observed in the teeth of some individuals who had used lemon juice for a few months only while, in contrast, in other cases the teeth had undergone less decalcification following use of this juice for more than a year. This variation may be due to differences in amount and buffer capacity of saliva.

It seems, therefore, that marked dissolution of tooth structure may occur as a result of drinking lemon juice, particularly if the juice is taken daily and at times other than with meals. In a few of the cases studied, lemon juice had been prescribed by professional persons; in some it had been taken on advice of nonprofessional persons. In the majority of cases, however, its use had been begun as a result of reading advertisements which advocated drinking lemon juice. It is a concern of everyone who deals with diet that there be adequate intake of vitamins, including vitamin C. However, an adequate amount of vitamin C can be had without resorting to improper use of lemon juice. In view of its apparent harmful effects on the teeth, its use as a daily drink in any appreciable concentration should be discouraged.

Other Acid Beverages

Destructive action, *in vivo*, of acid drinks and beverages on the teeth of animals has been described by McClure.[2] More recently Restarski, Gortner and McCay[3] observed the effects of a cola-

2. McClure, F. J., The Destructive Action, *In Vivo*, of Dilute Acids and Acid Drinks and Beverages on the Rats' Molar Teeth. *J. Nutrition* 26:251 (September) 1943.

3. Restarski, J. S.; Gortner, R. A., Jr., and McCay, C. M., Effect of Acid Beverages Containing Fluorides upon the Teeth of Rats and Puppies. *J.A.D.A.* 32:668 (June 1) 1945.

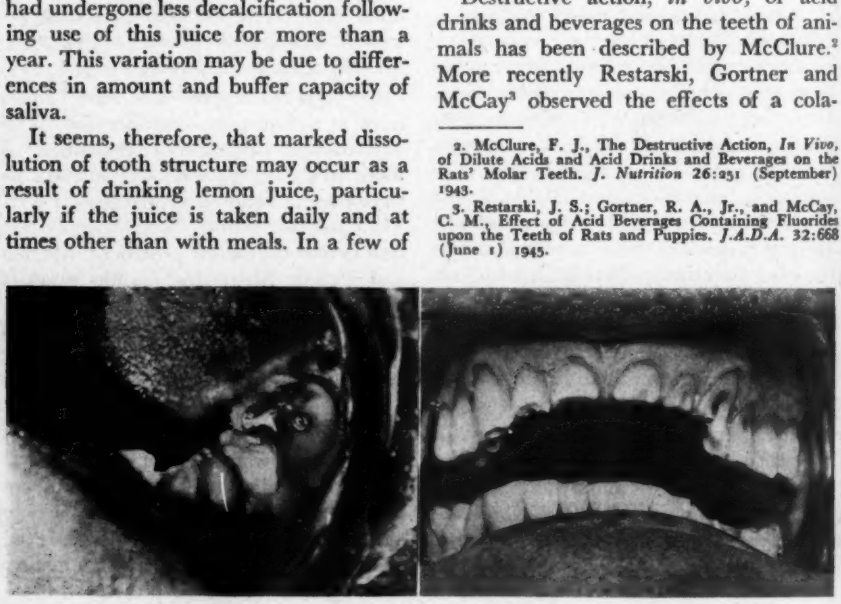

Fig. 2.—Left: Teeth of a man, aged 55 years, who had taken lemon juice in water on arising and before retiring for about two years. Lower left second bicuspid and first molar show extensive loss of dental structure on buccal and occlusal surfaces and of projection of silver alloy fillings above the surfaces. Defects in anterior and posterior teeth were present. Patient had been seen at intervals during fourteen years; defect had not been present three years prior to the time the photograph was made. Right: Teeth of a man who for a number of years had drunk lemon juice in water on arising. Lime juice sometimes had been substituted, a change which could not have appreciably altered the effect since the pH of both lemon and lime juice is approximately 2.2. Most extensive loss of dental structure was present in upper anterior teeth

type beverage on the teeth of rats and puppies. The beverage, obtained from a dispensing machine, had a content of phosphoric acid (H_3PO_4) of 10 per cent; the pH was 2.6. Marked destruction of enamel of the molar teeth of rats followed daily consumption of this drink. The greatest amount of destruction occurred within the first five to seven days, after which destruction proceeded at a slower rate. There also appeared to be some variation between individual rats in the rate and amount of destruction after consumption of this sucrose-acid beverage. This observation agrees with our own in man; namely, that there is apparently wide individual variation in the rate and amount of destruction of enamel in cases in which hydrochloric acid and other acid solutions have been taken daily, even when the solutions have been taken in the same dosage and under like conditions.

Restarski and co-workers[3] stated that the results of their observations on animals did not justify their making any definite conclusions as to what effects ingestion of acid beverages might have on the teeth of man. We have observed in some cases, however, destruction of enamel which we believe can be ascribed to the habitual use of acid beverages.

The almost unilateral location of the defects shown in Figure 4, left, suggests that brushing of the teeth doubtless played an important part in producing the defects. In considering contributing causes, however, one should have in mind the fact that mechanical wear actually could have been initiated and greatly accelerated by exposure of the teeth to a sugar-acid solution for a long time. Although the defects noted in Figure 3, right, were attributed, in large measure, to prolonged use of a cola-type beverage, it should be stated that other acid beverages, if consumed in similar quantities, probably produce similar effects.

Hydrochloric Acid

Administration of dilute hydrochloric acid by mouth as a therapeutic measure results in varied degrees of dissolution of dental substance (Fig. 4, right). Patients for whom hydrochloric acid is prescribed are required to use it not only once but several times a day and the course of treatment may extend over a period of several years. Many of those who have prescribed this acid have anticipated the

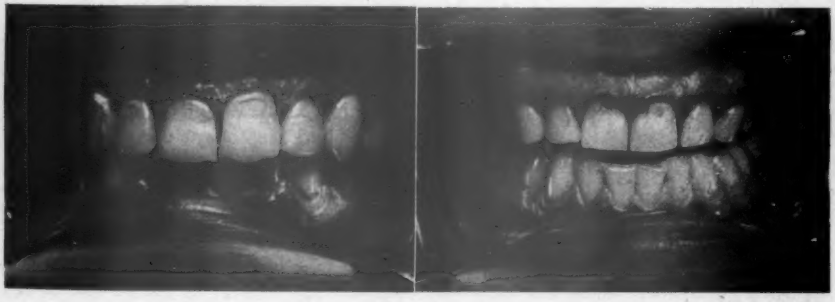

Fig. 3.—Left: Teeth of a woman, aged 20 years, who for about eighteen months had drunk lemon juice as a therapeutic measure on arising. Little enamel remained on labial surfaces of upper central incisors, and the dentin was exposed on upper left central incisor. Destruction apparently had been rapid, for the defect, first noted about a year prior to the time the photograph was made, had gradually become more extensive. Right: Teeth of a woman, aged 26 years, who had consumed at least one bottle a day of a beverage of the cola-type for nearly four years. Defects with rounded margins on labial surfaces of maxillary central incisors. Teeth were unusually free from stain. Patient had been informed that her teeth were soft

Fig. 4.—Left: Teeth of a woman, aged 33 years, who had drunk a beverage of the cola-type for many years. Enamel on nearly all teeth had undergone some decalcification. Marked defects were present on labial surfaces of maxillary central incisors. Linear defect on maxillary right lateral incisor extended from cervical margin to incisal edge. Defects had rounded margins, and in some areas the dentin had been reached. Right: Teeth of a man, aged 56 years, who for twelve years had taken dilute hydrochloric acid solution as a therapeutic measure. Crowns of six upper anterior teeth and palatal portions of crowns of upper first bicuspids had been destroyed. Little loss of enamel from lower anterior teeth as compared with loss from upper teeth, since the acid as ingested was probably more quickly neutralized because of a relatively great quantity of saliva in region of lower anterior teeth

possibility that it might be injurious to the teeth and have taken precautions to protect patients against it. One of the methods most frequently used by patients to prevent harmful effects is to take the fluid through a glass tube. However, in several cases in which hydrochloric acid had been prescribed, one of us found that the use of a glass tube had not given adequate protection.[4] In some cases marked destruction occurred. It was noted that the acid first attacked the palatal surfaces of the maxillary teeth, particularly the incisor and cuspid teeth. These surfaces probably received the greatest effect from the acid as it emerged from the tube.

Fortunately, since substitutes which do not have deleterious effects on the teeth are now often used in the treatment of achlorhydria, the need for prescribing hydrochloric acid by mouth has been greatly reduced. In the event that this acid must be prescribed, added precautions must be taken to avoid injury to the teeth, since a glass tube does not offer adequate protection. Ingestion of the acid in dilute solution with the meal, followed by an alkaline mouth rinse, should prove to be of value.

Acid in Vomitus

The dissolution of dental substance as a result of regurgitation and vomiting is perhaps much more prevalent than has been suspected. Regurgitation and vomiting as symptoms of gastro-intestinal disturbances are not of uncommon occurrence, and some persons who have vomited over long periods of time have sustained extensive loss of tooth structure. Bargen and Austin[5] reported a case in which considerable loss of dental substance had accompanied vomiting.

The effect of vomitus on the teeth is somewhat similar to that produced by drinking acid solutions. However, the posterior teeth are attacked earlier than the others and there is also earlier and greater destruction of the enamel of the lingual and palatal surfaces of the teeth as compared with their other surfaces. The cusps of the bicuspid and molar teeth become reduced in size and rounded;

4. Stafne, E. C., The Effect of Therapeutic Doses of Dilute Hydrochloric Acid on the Teeth. *Proc. Staff Meet., Mayo Clin.* 8:157 (March 15) 1933.

5. Bargen, J. A., and Austin, L. T., Obstipation with Long Continued Vomiting: Effect on the Teeth. *Am. J. Digest. Dis.* 3:198, 1936.

metal fillings, when present, project above the surfaces of the teeth (Fig. 5). Because of the relatively great size of the molar teeth, a relatively small proportion of the total volume is destroyed; as a result, on closing the mouth there may be occlusion of the posterior teeth only.

Vomiting is of common occurrence in the course of pregnancy and may occur over a period of several weeks. The cumulative effect on the teeth of acids from the gastric contents vomited may be appreciable if the patient has gone through several pregnancies with associated vomiting. In cases of vomiting it should be possible to prevent, to some degree, injury to teeth if the mouth is thoroughly rinsed with a solution of bicarbonate of soda or some other alkaline solution immediately on cessation of vomiting.

Acids for Topical Application

Acid solutions of sufficient strength to destroy dental structure have been used by dentists as an aid in cleaning teeth (Fig. 6, left). A certain proprietary product which has been widely advertised and used rather extensively for many years as an aid in cleaning teeth has been reported by the Research Council of the New York Academy of Dentistry,[6] as well as by the Bureau of Chemistry of the American Dental Association,[7] to be essentially a 4 per cent aqueous solution of hydrochloric acid; its use has been condemned by both agencies.

Decalcification of teeth may occur as a result of the application of acids which are used for the treatment of certain diseases of the gingivae. These acids may be effective in the treatment of these conditions; however, in view of possible injury, long continued and repeated applications should be avoided in regions where the teeth are to be retained.

Fig. 5.—Teeth of a man, aged 42 years, who had vomited intermittently for five years. Enamel of all teeth, except those on which gold crowns were present, had undergone some degree of decalcification. Dentin had been reached on some surfaces, including portions of crown of an upper left molar. Obviously the rate of destruction by acid was appreciably reduced after the dentin had been reached

Acid Confections

West and Judy[8] have reported deleterious effect on teeth caused by ingestion of acid candies. One of us has reported the destruction of teeth, *in vivo*, following use of cough drops.[9] Occasional use of such candies probably does little harm, but habitual use may be paralleled by marked destruction of the teeth.

The clinical picture which is seen in association with excessive use of confections and confection-like agents differs from that wherein decalcification follows use of dilute acid solutions. The teeth do not have the uniformly smooth appearance which characterizes the repeated use of acid solutions. They lack a clean appearance. The areas involved differ in that the buccal and labial gingival third of the anterior and posterior maxillary and mandibular teeth undergo the greatest change while the incisal edges and the broad labial and buccal surfaces of the teeth may show little or no change (Fig. 6, right). The areas of destruction often appear as if blocks of enamel have

6. Research Council of the New York Academy of Dentistry, Studies of the Validity of Advertised Claims for Dental Industrial Products; First Public Report: on "Taxi" and "Stain Remover." *J. D. Res.* 7:477 (December) 1927.

7. Council on Dental Therapeutics, Taxi—Not Admissible to A.D.R. *J.A.D.A.* 23:1975 (October) 1936.

8. West, E. S., and Judy, F. R., Destruction of Tooth Enamel by Acidified Candies. *J. D. Res.* 17:499 (December) 1938.

9. Lovestedt, S. A., Decalcification of the Crowns of Teeth *In Situ*. *Am. J. Orthodont. & Oral Surg.* 30:52 (January) 1944.

Fig. 6.—Left: Teeth of a woman, aged 31 years. A proprietary product, the action of which was equivalent to that of a 4 per cent hydrochloric acid solution, had been used on several occasions for cleaning the teeth. There was evidence of decalcification of many teeth and destruction of nearly all enamel on labial surfaces of upper posterior teeth. Convex surfaces had become concave, and the dentin was exposed on upper right second bicuspid and first molar. Teeth also had been subjected to vigorous brushing, as evidenced by traumatic recession of gingivae, particularly in cuspid regions, but defects caused by acid were some distance from cervical margins and were not typical of those produced by brushing. Right: Teeth of a man, aged 40 years, who had been using mints and cough drops for approximately a year. He complained of sensitive teeth and had been aware of grit in his mouth; he thought this grit was enamel from his teeth. Chief areas of dental destruction were gingival, labial and buccal portions of crowns of teeth, where the dentin had become exposed

been bodily removed and no attempt made to smooth the remaining edges. The exposed dentin may be of a dark yellow-brown color and have a softened surface. Once started, the process seems to spread laterally along the dento-enamel junction to undermine the enamel and allow it to be lost, so that smooth, beveled edges are not produced but rather abrupt sides resembling palisades tend to occur.

Comment

With increased consumption of citrous fruits, acid beverages and acid confections the total quantity of acids introduced into the mouth has become appreciably higher than before. All these acid substances accelerate mechanical wear, particularly wear by brushing. One should be aware of the effect of such substances on the teeth. Many cases of destruction of dental substance attributed to brushing may, on questioning, prove to be cases in which acid in some form may have been the initiating factor.—*102 Second Avenue S.W.*

Chemotherapy of Wounds.—For local chemotherapy antibacterial substances should possess prompt bactericidal activity in the presence of blood. Because of the rapidity of absorption and neutralization, antibacterial agents which possess only bacteriostatic activity and therefore require considerable time to act are not useful for local chemotherapy unless the soluble portion can remain absorbed for a long time without neutralization or the parent substance dissolves slowly or a base is employed slowly to release the soluble portion. The last two possibilities usually lead to continuing inflammatory reaction and fibrosis and to extrusion of the offending substance.—*"Local Chemotherapy of Wounds." J.A.M.A. 132:333, October 12, 1946.*

GOLD FOIL FILLING:

DESCRIPTION OF SPECIAL TECHNIC

Alexander W. Jeffery, D.D.S., Seattle

THE mesial surface of permanent first molars is especially subject to caries from the time of eruption until the deciduous second molars are lost. The broad flat surface of the deciduous molar in contact with the permanent molar creates an area of susceptibility to caries. Decalcification usually takes place in the middle third of the mesial surface and extends buccally and lingually to self-cleansing areas (Fig. 1).

Ammoniacal silver nitrate should be applied to this area as soon as the permanent molar has erupted. Repeated applications should be made until loss of the temporary second molar. This will prevent rapid decalcification and delay placement of a filling in the mesial region of the permanent first molar until the patient is 10 years old.

Roentgenograms will usually disclose at this time that there is decalcification of the enamel and that caries has taken place in the dentin. This is the specific time to fill the mesial region of the permanent first molar with gold foil.

The patient and parent should be well informed by the dentist as to the importance of filling this region as soon as the deciduous second molar is lost. If the deciduous tooth is loose it should be removed and a gold foil filling placed at once. It has been my experience that patients are very cooperative and aid in the success of the operation.

Cavity Preparation

Conduction anesthesia is tactfully and carefully induced. A rubber dam is placed from the first molar to the central incisor. The teeth are dried and small amounts of modeling compound are sealed to the teeth to hold the rubber dam and clamp in place.

The tension of the rubber dam will retract the gingival tissue and thereby expose a greater area of the mesial surface. This will disclose a line of decalcification in the middle third of the coronal portion of the tooth, extending to the lingual and buccal angles. Caries has usually penetrated the dentin in the central region.

The outline form of the proposed cavity preparation should be determined at this time. It must be extended buccally and lingually, including decalcified enamel, to at least the angles of the tooth or to an area which will be relatively immune to caries after the second bicuspid has erupted. Gingival extension

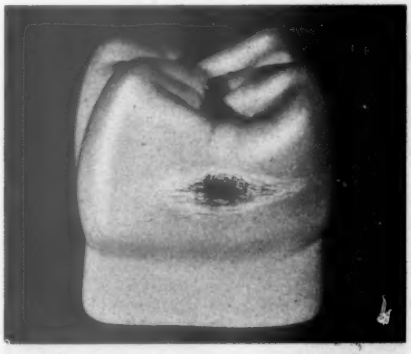

Fig. 1.—Decalcified region on mesial aspect of first permanent molar after loss of temporary second molar

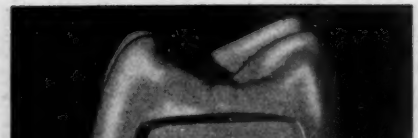

Fig. 2.—Outline form of cavity preparation, showing extension for prevention of caries

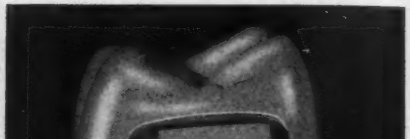

Fig. 4.—Noncohesive foil cylinders pressed to place against gingival, buccal and lingual walls

usually should be carried to the position of the rubber dam. Occlusal extension should be patterned in the form of a slight arc to include the height of contour of the contact point (Fig. 2).

Cavity preparation is started by the breaking down of loose enamel rods and the removal of caries. At this time it is usually advisable to apply thymol to the dentin which was exposed to caries. An inverted cone bur and cutting instruments are used to continue the cavity preparation.

The buccal and lingual walls of the cavity should be at right angles to the axial wall. The gingival wall must form a slightly acute angle with the axial wall. The occluso-dentinal wall should be at right angles to the axial wall. The occluso-enamel wall must conform to the cleavage of the enamel and must have a long bevel extending occlusally to include the contact point (Fig. 3). Cavity lining is placed on the dentin, and the enamel of the cavosurface angle is planed.

Fig. 3.—Mesiolingual view of cavity preparation, showing long bevel of occluso-enamel wall

Condensing the Filling

Noncohesive foil cylinders are pressed to place against the gingival, buccal and lingual walls (Fig. 4). Cohesive foil is placed on the lingual portion of the axial wall from the gingival to the occlusal walls and condensed to place. This forces the noncohesive foil against and over the margins. Filling is continued by condensation of foil with round plugger 7½ = 10 = 3, except in the buccoclusal portion of the cavity, where a bayonet type of plugger is used to obtain the correct line of force. After the foil is condensed over the margins, a foot plugger is used as a finishing aid to force the excess gold over the margins.

Little time is consumed in finishing this filling. A coarse disk is placed on the mandrel of the contra-angle handpiece with the cutting side toward the handpiece. Judicious application of the disk will bring the entire filling to form. Then

finer disks and a polishing agent are used to give the final luster to the filling (Fig. 5).

Comment

It has been my experience, over a period of about twenty years, that placement of this class of filling renders a highly valuable service. Patients have never complained of sensitivity from the filling or soreness of the tooth from condensing of the foil. Caries will not recur in the proximal area if the proper outline form was made for the filling.

The advantage of this filling is that properly placed gold foil possesses most of the qualities desired in a permanent filling material. The operation is completed at one sitting with speed and the least cutting of tooth structure.—*533 Medical and Dental Building.*

Fig. 5.—Finished gold foil restoration

DENTAL CARE FOR CHILDREN IN RELATION TO GERIATRICS

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No attempt to evaluate the problem of dental care would be complete if it failed to consider the situation created by the aging of the population. The gradual increase in the proportion of older people in the population has brought many new and important health problems. Not only do more persons now survive to the period when the chronic diseases are most prevalent, but also this survival to a more advanced age has expanded the dental needs of the population. More than any other factor, it has served to emphasize the long-range importance of dental health and the need for utilization of all worth-while knowledge toward conservation of the natural dentition. This being so, it should readily be apparent that aging of the population demands that greater emphasis be placed on dental care for children, and that this problem be seen as one which now carries serious long-range implications. In general, the problem created by aging of the population is new and the situation which it creates is without precedent. "Never before in the history of mankind has a like problem presented itself."[1]

The various problems arising from the aging of the population, and especially those which arise from ill health, indicate clearly that it is not enough to cause people to survive to the upper age levels. As stated by Piersol and Bortz,[2] "The

1. Steiglitz, E. J., The Potentialities of Preventive Geriatrics. *New England J. Med.* 225:248 (August) 1941.

2. Piersol, G. M., and Bortz, E. L., The Aging Process: A Medical-Social Problem. *Ann. Int. Med.* 17:964 (January) 1939.

society which fosters research to save human lives cannot escape responsibility for the life thus extended. It is for science not only to add years to life, but, more important, to add life to the years."

Extension of Life Expectancy

The increased proportion of older people in the population has resulted from extension of the average expectancy of life, decline in the birth rate and restrictions in immigration. In 1940 there were approximately 13,000,000 persons beyond the age of 60, and 9,000,000 beyond the age of 65. This may be compared to the fact that at the beginning of the century only about 4 per cent of the population of the United States or approximately 3,000,000 persons were over 65 years of age. A good indication of the rate at which the population of the United States has aged may be gained from the table which shows the median age for each decade between 1820[3] and 1940.[4] Between 1840 and 1940 there has been an increase of 11.2 years in the median age. What is more remarkable is the increase of 2.6 years during the decade from 1930 to 1940.

Will this aging of the population continue? On the assumption that there will be no net immigration, the United States Bureau of Census predicts that it will. The prediction of the Bureau is as follows:[5,6]

Age Group	*1940*	*1980*
0-19	34.5	25.8
20-54	50.7	47.0
55-64	8.0	12.8
65 and over	6.8	14.4

Median Age of Population, 1820 to 1940

Year	Median age
1820	16.7
1830	17.2
1840	17.8
1850	18.8
1860	19.4
1870	20.1
1880	20.9
1890	21.4
1900	22.9
1910	24.0
1920	25.2
1930	26.4
1940	29.0

The extension of life expectancy has been one of the greatest achievements of science, medicine and public health. Prior to the last four decades, the advance was gradual. Since 1900 there has been a gain of 17 years, a greater advance in 45 years than was achieved during the 124 years from the period of the American Revolutionary War to 1900. The spectacular nature of the total advance is seen in the estimate that life expectancy was but 21 years in the sixteenth century.[7] By the time of the American Revolution, life expectancy had advanced to approximately 35.5 years,[8] to 47 years in 1900 and to 63 years in 1940. It has been estimated that further advances are possible and that the average life expectation at birth may reach 75 years in the future. This increase in life expectancy does not mean that the span of life for man has been extended, for there has been no significant gain in the expectancy after fifty years. It does mean that as more people are able to reach this age, there will be more persons who reach the ages of 60 to 65 years and over.

The growing concern for the health of older people has caused greater interest in gerontology, which is devoted to the study of aging, and geriatrics, a field which deals with the medical care of

3. Wilcox, W. F., *1820-1930, Studies in American Demography.* Ithaca, N. Y.: Cornell University Press, 1940, p. 1933.

4. U. S. Bureau of Census, *Age Composition of Population.* Series P-10, No. 6, April 1942.

5. U. S. Bureau of Census—1940 Census.

6. Thompson, W. S., and Whelpton, P. K., National Resources Planning Board, *Estimates of Future Population of the United States.*

7. Piersol, G. M., and Bortz, E. L., The Aging Process: A Medical-Social Problem. *Ann. Int. Med.* 17:964 (January) 1939.

8. Boas, E. P., *Treatment of the Patient Past Fifty.* Chicago: The Year Book Publishers, Inc., 1941, p. 11.

aged persons. As is so clearly pointed out by Steiglitz,[9] the primary purpose of geriatrics is not to prolong life but to take such steps as will add to the health and usefulness of the elderly. Geriatrics considers that aging brings changes and that people who have reached old age are not simply old people but are different in many ways (physiologically, anatomically and mentally) from what they were in the period of maturity.

Increased Prevalence of Dental Diseases

When life expectancy was much lower than it is today and comparatively few persons lived to reach even middle life, the chronic diseases were obviously far less prevalent than they are today. For the same reason, it is quite probable that periodontal disease and the accumulated effects of dental caries were not as prevalent as they are now. Today, the chronic diseases present an outstanding challenge which increases in importance with continued aging of the population. Although adequate records are not available, it appears reasonable to assume that the prevalence of dental caries, periodontal disease and deficiencies in the number of teeth also has increased markedly. To a large extent this is a result of the increase in time during which the teeth and their support are exposed to the various injurious factors. As a consequence of the increase in the proportion of older people, there is greater need for dental prosthesis and for the prevention and control of diseases of the supporting tissues of the teeth. Obviously, teeth were removed in the days of short life expectancy, but this must have been done largely for the relief of pain. At the present time the great prevalence of deficiencies in the number of teeth reflects the accumulated effects of dental caries, malocclusion, systemic disease and malnutrition. There is, in other words, an accumulation of these effects which in the days of short life expectancy was not possible except in a small section of the population.

The loss of teeth in the older section of the population presents a spectacular situation which has many serious implications with regard to nutrition and health. Brekhus[10] has estimated that the people of civilized groups lose more than one-half their teeth before they reach the age of 40 years. Walls, Lewis and Dollar[11] suggest that 40 per cent of persons 60 years of age have no means of mastication. Data from Collins[12] and Walls, Lewis and Dollar[13] (as adjusted by Klein[14]) show extractions and indicated extractions for the group of persons aged 40 to 44 to be 13.7 teeth. The number of extractions and indicated extractions increased to 18.5 for the group of persons aged 50 to 54, and to 22.8 for the group of persons aged 60 to 64.

Early Loss of Permanent Teeth

There is no evidence that the great loss of teeth in persons beyond middle life is a result of normal aging. Worthin[15] has expressed the opinion that the loss of permanent teeth should not begin before the age of 60. Carlson[16] stated, "The decay and failure of teeth in modern man is probably more a matter of nutrition and other accidents of living than the rapid ticking of the hereditary time clock." As Becks and Morgan[17] pointed out, "Were it not for these pathologic

9. Steiglitz, E. J., *Geriatrics Medicine*. Philadelphia: W. B. Saunders Co., 1943, p. 32.

10. Brekhus, P. J., Dental Disease and Its Relation to the Loss of Human Teeth. *J.A.D.A.* 16:2247 (December) 1929.

11. Walls, R. M.; Lewis, S. R., and Dollar, M. L. *A Study of Dental Needs of Adults in the United States*. Chicago: American Dental Association, 1940.

12. Collins, S. D., Frequency of Dental Services Among 9,000 Families, Based on Nation-Wide Periodic Canvasses 1928-31. U. S. Public Health Report 54: 629-657, 1939.

13. Walls, R. M.; Lewis, S. R., and Dollar, M. L., *Op. cit.*

14. Klein, Henry, Tooth Mortality and Socio-Economic Status. *J.A.D.A.* 30:80 (February) 1943.

15. Worthin, A. S., *Old Age the Major Involution*. New York: Paul B. Hoeber, Inc., 1929, p. 92.

16. Carlson, A. J., The Physiology of Aging. *Northwest Med.* 42:46 (February) 1943.

17. Becks, H., and Morgan, A. F., Tooth Decay and Pyorrhea. *Science Supplement* 44:9 (November 21) 1941.

changes in the teeth and gums that are now believed to be caused by improper diet and systemic disease, the teeth would have remained to undergo the regular involutionary changes of aging."

In view of the dental deficiencies among registrants under the National Selective Service Act of 1940, it is reasonable to assume that the estimates of Brekhus, Walls, Lewis and Dollar, and Klein are not excessive. Under the Selective Service Act, 8.8 per cent of the first 3,000,000 men examined were not acceptable for military service because of dental defects. These men were in the age range from 21 to 25 years. They were required to have only three opposing serviceable natural masticating teeth and three serviceable opposing natural incisors. Later (1942), in order to secure sufficient personnel, the dental standards were lowered. In 1944, Rowntree[18] reported that almost eight out of every 1,000 white registrants were recorded as having no natural teeth.

With lowering of the dental standards it became necessary for the Army to carry on a program of dental rehabilitation after men had been inducted. From December 7, 1941, to December, 1945, the Army Dental Corps provided service for the extraction of 16,500,000 teeth and for the construction of 2,600,000 dentures.[19] Although most of these dentures were of the partial type, these and the dentures worn by men upon induction indicated a high prevalence of tooth loss among men who were accepted for military service. Inasmuch as deficiencies in the number of teeth increase with advance in age, it is probable that these men will show a high prevalence of tooth loss at the age of 60 years.

The frequent and casual disregard of the masticatory function of elderly people appears to have its origin in the common assumption that they require but little food and that for them an adequate diet requires the use of few if any teeth. There is no evidence that elderly people require less nutrition than they did during their period of maturity. Tuohy[20] pointed out that, "for reasons hard to understand, there is the widest belief that the elderly should be abstemious. . . . Perhaps 'the less food for old people' fallacy hinges on the supposition that, for them, energy for current expenditure is the chief item and therefore carbohydrate and some fat with a minimum of protein suffice. In any case, that is the way many old people exist but do not live." Although older persons leading a comparatively inactive life may require less caloric intake than during their active years, it is obvious that proper nutrition should be maintained. This does not mean nutrition as judged by the older standards, but rather a nutritional status evaluated in terms of our present knowledge.

Effects of Impaired Mastication

The immediate and long-range effects of impaired mastication were not viewed as significant in the days when food was simply food and the calorie was the sole yardstick of nutrition. Today it is accepted that malnutrition may go far beyond imbalance arising from an improper ratio of protein, carbohydrate or fat, and involve deficiencies in the vital accessory factors, the vitamins and minerals. Existing evidence indicates that, although gross manifestations of these deficiencies are rare, their prevalence at subclinical levels is high. Therefore it is reasonable to assume that proper food choices are now of greater significance than ever before and that any factor which adversely influences them warrants greater concern than in the days of less sensitive and less complex nutritional standards.

18. Rowntree, L. G., Report of Medical Division of National Selective Service. *J.A.D.A.* 31:1157 (August 15) 1944.

19. Bulletin of the U. S. Army Medical Dept. 4:632, 1945.

20. Tuohy, E. L., Feeding the Aged. *Handbook of Nutrition.* Chicago: American Medical Association, 1943, pp. 569-570.

It has been demonstrated that under experimental conditions children,[21] domestic animals[22-24] and rats[25-27] are guided by appetite in the natural selection of their nutritional requirements. This is also doubtless true of primitive man. Yet, under the conditions of everyday life in a civilized environment, this instinct toward the natural selection of proper foods is subject to many inhibiting forces. As a consequence, man cannot on the basis of instinct be relied on to select food with relation to his physiologic needs.

It is well established that choices of food may be conditioned not only by its palatability and individual economic status but also by the loss of teeth, gastro-intestinal disorder, food allergy and neuropsychiatric disorder.[28] In addition, these choices may be influenced by pain during mastication, poorly fitting dentures and those factors which cause mastication to be uncomfortable or prolonged. These various conditions alter or limit the range of food selection with regard to both composition and physical state, and often lead to malnutrition.

As Musser,[29] in discussing the difficulties encountered in attempts to encourage the use of balanced and protective diets among elderly people, suggested:

> The role that the teeth play in proper mastication and the subsequent assimilation of food is too well appreciated to require particular accentuation; nevertheless it may be said that when people do not have natural teeth they are often severely handicapped in their eating habits and that this may exaggerate the pathologic changes which are inherently a part of old age. . . . Improper dentures, for example, may cause ill health: this is too well known to every physician to require much amplification.

Even if they do not cause local lesions, badly fitting dentures interfere with mastication. Musser pointed out that, as a result of this, older people with dentures will often refuse to masticate anything but the softer starchy and carbohydrate foods.

Sebrell[30] remarked that, among other factors, difficulty in mastication may require special methods of food preparation for older people. He suggests diets of soft texture for the edentulous patient as a protection against inadequate assimilation or irritation of the colon. Overholser,[31] in her remarks relative to the value of diet therapy in old age, pointed to the limitations often imposed by inadequate dentures or lessened appetite. McLester[32] also indicated the frequent need for soft diets which was created by lack of sufficient teeth.

Boas[33] called attention to the adverse influence of diminished masticatory function occasioned by the loss of teeth, or by diseased teeth, and to the shifts to soft foods common to elderly people who cannot masticate effectively. Boas considers it most important that all aging persons have dentures adequate for mastication of a varied diet. Meyer and Necheles[34] referred to the fact that older people eat large amounts of carbohydrate foods because they are easier to chew. Meyer

21. Davis, Clara M., Self-Selection of Diet by Newly Weaned Infants. *Am. J. Dis. Child.* 36:651 (October) 1928.

22. Richter, C. P., Decreased Carbohydrate Appetite of Adrenalectomized Rats. *Proc. Soc. Exp. Biol. and Med.* 48:577 (December) 1941.

23. Richter, C. P., *The Self-Selection of Diets, Essays on Biology.* Univ. of California Press, 1941, pp. 499-506.

24. Evvard, J. M., Is the Appetite of Swine a Reliable Indication of Physiological Needs? *Proc. Iowa Acad. Sci.* 22:375, 1915.

25. Nevins, W. B., Experiments in the Self Feeding of Dairy Cows. *Ill. Agr. Exp. Sta. Bull.* 289, 1927.

26. Dove, W. F., A Study of Individuality in the Nutritive Instincts and of the Causes and Effects of Variation in the Selection of Food. *Am. Nat.* 69:469 (Supplement to September-October) 1935.

27. Wilder, C. E., Selection of Rachitic and Antirachitic Diets in the Rat. *J. Comp. Psych.* 24:547 (December) 1937.

28. Jolliffe, Norman: *Conditioned Malnutrition, Handbook of Nutrition.* Chicago: American Medical Association, 1943, p. 589.

29. Musser, J. H., cited by Wohl, M. G., in *Dietotherapy.* Philadelphia: W. B. Saunders Co., 1945, p. 505.

30. Sebrell, W. H., cited by Steiglitz, E. J., in *Geriatrics Medicine.* Philadelphia: W. B. Saunders Co., 1943, p. 210.

31. Overholser, Winifred, *Op. cit.*, p. 271.

32. McLester, J. S., *Nutrition and Diet in Health and Disease.* Philadelphia: W. B. Saunders Co., 1944, p. 270.

33. Boas, E. P., *Treatment of the Patient Past Fifty.* Chicago: The Year Book Publishers, Inc., 1941, p. 40.

34. Meyer, J., and Necheles, H., The Clinical Significance of Salivary, Gastric and Pancreatic Secretion in the Aged. *J.A.M.A.* 115:2051 (December 14) 1940.

considers that "loss of the teeth, or a set of poorly fitting teeth, is a matter of serious concern to most old people. The difficulty in mastication necessitates a change to a soft or a liquid diet. The enjoyment of food that comes from proper mastication is important to the aged, and the condition of the teeth and mouth should therefore receive the attention of the physician or dentist."[35] Rose[36] also remarked that the loss of teeth imposes dietary problems because difficulty in mastication limits the dietary to those foods which are soft and more easily masticated.

Thewlis[37] made this interesting observation: "Lack of teeth is a major cause of digestive disturbances. Empty spaces unfilled by dentures are objectionable since thorough mastication is impossible without sufficient grinding surfaces. Occasionally aged persons without teeth or dentures remain in good health, but they depend on soft foods." Palmer[38] expressed the following view:

> Undernourishment may also be the consequence of diets that have been seriously altered, owing to changes of the senses of taste and smell—changes that have been very common in old age. Or it may be that, owing to the loss of teeth and difficulties in mastication, the individual fails to include in his diet such foods as meat and leafy vegetables, which contain the vitamins necessary to health.

Johnson[39] suggested:

> As people grow older they are likely to become more finicky about their diet, particularly if they lack sufficient teeth to provide satisfactory mastication. As the carbohydrate type of food is easily chewed, it is natural that it should come to occupy too large a place in the dietary. Many older people really suffer from protein deficiency, and are greatly benefited when an adequate intake of this important dietary essential is instituted.

Brown,[40] in discussing digestive problems in old age, indicated the value of even a few teeth in older people and gives a much needed warning against the often unwarranted extraction of their remaining teeth:

> It is a wise physician who retains the teeth of the aged, albeit scanty and diseased, as long as possible, unless he is absolutely convinced that they cause disease elsewhere, for in the old, the fitting of plates is often difficult or impossible and it is a poor consolation to the patient to know that he no longer harbors potential foci of infection, if he may no longer chew, and must perforce live on pap.

In view of the many complaints and symptoms among older people, the difficulties encountered in constructing satisfactory artificial dentures and the fact that adjustment to dentures by the elderly often presents a serious problem, there is ample justification for the foregoing warning. It is nothing short of brutal to deprive old people of their teeth on the basis of a general and ill founded assumption that they will always find relief from their symptoms of systemic disease or disorder. The problem of extraction of teeth is far more complex than it is for younger persons, and careful diagnosis and planning are necessary before decisions are reached to remove the teeth of older people.

Inadequate Nutrition

It appears to be generally accepted that deficiencies in masticatory function may interfere with adequate nutrition of elderly persons. It also appears to be well established that the maintenance of proper nutrition in this group presents for many reasons a highly important though difficult problem. There is abundant evidence that older people need the protection afforded by a balanced and varied diet. They have gradually diminishing re-

35. Meyer, J., The Management of Diseases of the Gastrointestinal Tract of the Aged. *M. Clin. North America* 24:9 (January) 1940.

36. Rose, Mary S., and Gardner, Emma W., The Banana As a Food for the Aged. *J. Am. Dietet. A.* 16:209 (March) 1940.

37. Thewlis, M. W., *Care of the Aged*. St. Louis: C. V. Mosby Co., 1942, p. 111.

38. Palmer, H. D., Mental Disorders of Old Age. *Geriatrics* 1:62 (January) 1946.

39. Johnson, Wingate M., Diet in Older People. *Geriatrics* 1:349 (September-October) 1946.

40. Brown, Thomas R., Digestive Problems in Old Age. *Internat. Clin.* 4:36 (December) 1928.

serves and can ill afford the consequence of dietary deficiencies which may play a significant role in lowering the margin of safety. The importance of adequate tissue reserves is to be seen in the suggestion by Carlson[41] that all the changes which "constitute the aging process point to a gradual depletion of the hereditary tissue reserves or 'factors of safety' so that the aging individual becomes gradually less able to meet the usual accidents and unusual stresses of living."

Prosthesis

The suggestion is frequently made that diminished masticatory function in elderly people can be restored through complete denture prosthesis and that shifts in food habits thereby may be avoided. Despite the splendid skills of the dental profession in the field of prosthesis, the problem is not that simple. There are variations in the shape, condition and relation of the jaws which cause these dentures to be difficult to construct and to wear with comfort and effectiveness. There is also the absorption of the ridges which calls for frequent refitting, and the instability of the dentures which often occurs during illness. Furthermore, many older persons do not readily adjust themselves to the wearing of dentures, as do those who lose their teeth before middle age. Many of these elderly patients are seriously affected emotionally by age, chronic disease or inability to adjust themselves to retirement. These and other factors appear to support the view that every elderly patient should be studied carefully before decisions are reached to remove all remaining teeth. Again it may be well to point out that survival alone is not the criterion by which the welfare of these patients should be measured. Therefore, the fact that people may survive without teeth or with artificial dentures may be quite meaningless in terms of health and vitality.

41. Carlson, A. J., The Physiology of Aging. *Northwest Med.* 42:47 (February) 1943.

Faulty Diet and Disease

Sebrell[42] has called attention to the relation of obesity to many of the ills which affect aging and aged persons, and refers to the fact that a number of diseases such as atherosclerosis, senile cataract and diabetes have been ascribed to the habitual excessive consumption of lipoids and carbohydrates. He also warns that excessive use of fats and carbohydrates should be avoided by the aged person. Although the evidence indicates that diets low in calories delay the onset of senescence and lengthen the individual life span,[43] it is difficult to bring about such restrictions in patients with deficient masticatory function. A great many persons who have lost their teeth or who wear poorly fitting dentures have stated that their weight increased after the loss of teeth and the shift to soft carbohydrate foods.

The dangers of obesity in old age are well known although the existence of this condition does not always give proof for the frequent statement that many fat persons "dig their graves with their teeth," for they often appear to "dig their graves" without teeth through the undesirable shifts in food habits which the absence of adequate masticatory function brings about.

Jeghers[44] stated that the reduction in appetite coupled with the loss of teeth and inadequate dentures "frequently marks the onset of a poor dietary regime in old age. The latter cause is commonly responsible for the clinically detectable deficiencies noted in old people studied in the medical wards of the Boston City Hospital." Obviously, such a combination as diminished appetite and loss of teeth is a potent influence in determining the choice of food and the total food intake.

42. Sebrell, W. H., cited by Steiglitz, E. J., in *Geriatrics Medicine*. Philadelphia: W. B. Saunders Co., 1943, pp. 203-204.

43. McCay, C. M.; Crowell, M. F., and Maynard, L. A., The Effect of Retarded Growth Upon the Ultimate Body Size. *J. Nutrition* 10:63 (January) 1935.

44. Jeghers, H., Nutrition. *New England J. Med.* 225:694 (October) 1941.

Unfortunately, the foods chosen are usually soft and low or entirely lacking in vitamin content. It is not to be expected that the resources to be found in the modern knowledge of nutrition will fail to be applied to old people because they are old, or for any other reason. However, it is fairly common to see the dental problems of old persons casually approached on the assumption that but little time remains for them, and, as a consequence, efficient masticatory function is unimportant. In fact, such an attitude is frequent among elderly persons themselves. This is most unfortunate, for efficiency in mastication is quite as important after the age of 60 as at any other time. When it is assumed to have little value in later life, and as a consequence the teeth receive little or no care, nutrition is almost certain to be impaired. The fact that people survive without their natural teeth does not support the assumption that mastication is an unessential function among the elderly. As is clearly stated by Steiglitz,[45] "The primary objective of medical science is not the mere prolongation of life, but the insurance of greater health, vigor and usefulness until true senility creates infirmity." Therefore, the absence of teeth and its effects should be measured in terms other than mere chronologic age or survival.

Dental Health in Youth and Age

It is now generally agreed that prophylactic geriatrics has its beginnings in pediatrics. By the same token, it is obvious that dental health in later life has its origin in dental care for children—a type of care which should aim to provide a foundation for the maintenance of normal masticatory function throughout a probably longer life span. Today, with an average life expectancy at birth of 65 years, the need for a good beginning is more imperative than at any time in the history of mankind. Early death no longer shortens the time during which the teeth and their supporting tissues are exposed to the accidents of living. Yet the concept of dental care for children is geared in general to the days of short life expectancy. This is not difficult to understand, for advances in the expectation of life have been gradual. Furthermore, the geriatric implications of dental ill health are far in the future of the child, and often beyond the future and the vision of those who are responsible for the dental care of children. Obviously, it is difficult to look forty to sixty years ahead. Nevertheless, we are faced with the problem of providing the soundest possible basis for dental health beyond the age of 50.

Robey[46] made a pertinent statement which is applicable to dental as well as general health. He suggested that "health at fifty and beyond holds implicit the fact that there must be conservation and promotion of physical and mental vigor during childhood and adolescence, early attention to remediable impairments, and prevention of disease and disability through adequately applied knowledge."

A child of today, with average life expectancy, will need his dentition 42 years longer than the average child of the sixteenth century; 27 years longer than those born at the time of the American Revolution, and 17 years longer than those born at the beginning of the twentieth century. This, of course, does not mean that the total life span for civilized man has increased. It does mean that more children will survive to reach the upper age levels. It also means that, unless adequate preventive or control measures are provided, approximately 40 to 50 per cent of these children will have no natural means of mastication when they reach the age of 60 years. In fact, it is highly probable that they will lose one half of their natural dentition before they reach the age of 40.

45. Steiglitz, E. J., *Geriatrics Medicine*. Philadelphia: W. B. Saunders Co., 1943, p. 8.

46. Robey, William H., *Health at Fifty*. Cambridge: Harvard University Press, 1939, p. 5, preface.

Prevention

The great advance in life expectancy has found us unprepared in many ways. In terms of dental care, this unpreparedness is indicated by the fact that life expectancy of the teeth is so much shorter than that of the human being. Among the more significant causes for this discrepancy are (1) the rather widespread failure to appreciate the long-range significance of dental care for children, (2) lack of adequate means for prevention and control, and lack of personnel for proper utilization of existing knowledge and technics and (3) inadequate appreciation of the fact that dental care for children frequently must be based on consideration of the problems of nutrition, health, growth and development, and in general of the whole child.

Importance of Masticatory Function

Although there are other factors to be considered, the most significant criterion for evaluation of dental care for children is the maintenance of proper masticatory function. Although this function is important in many other ways, it is especially so in its relation to the choices of food and the eating habits of children, and, as a consequence, to their nutritional status. This was not seen as important in the years when a child was considered properly fed if his hunger was satisfied. Neither was masticatory function in its relation to food preferences important when the body weight of children was so extensively used as an index to good or bad nutrition. It is true, of course, that many of the conditions which modify or alter food preferences are rare among children. However, this cannot be said of extensive dental caries, loss of teeth, gingivitis and marked malocclusion. The incidence of these conditions in the child population is spectacular, and there are good reasons for believing that their immediate and long-range effects on nutritional status are substantial.

To expect the formation of good eating habits and proper choices of food in children with impaired masticatory function is obviously expecting too much. No one expects crippled children to express the same desires or the same efficiency with regard to physical activities as are to be found in normal children. Children with impaired masticatory function are crippled children. They differ from other crippled children in that they are not called on to match their masticatory ability with that of any other child, which is not true of activities which involve walking, running or the use of the arms or hands. The child with crippled limbs is required to limit his activities. So also does the child whose mastication is impaired to varying degrees bring his chewing habits as well as his food preferences into harmony with his masticatory equipment.

As a consequence, the effects of the impairment of function are usually unnoticed, or the alteration in food preference is ascribed to some other cause. There is nothing strange about these adaptations. They are common in the adult population. In the case of farm animals which live long enough to acquire disturbances of masticatory function, survival is dependent on adaptations made by those responsible for their care. With similar deficiencies, animals in their natural state become inefficient and fail to survive.

The effects of dental disease, dental deficiency and malnutrition are progressive with age. Therefore, the fact that dental disease is so widely prevalent among children becomes of great significance when measured in terms of their average life expectancy. This was not quite so readily apparent in the days when health was defined merely as the absence of disease. It stands out today when health is defined in a more positive way, and when vitality and reserve capacity are the important and perhaps the most important criteria.

Conclusion

The long-range implications of dental care for children should provide a compelling motive for action on the part of parents and dental practitioners. At no other time in the history of the dental profession has the dental health of children presented a more forceful challenge. In the past, and, in fact, at present, this problem has been largely incidental to that associated with the care of older age groups. At the same time, solution of the dental problems of a great many elderly people has been approached through surgery and prosthesis. The whole problem is now clearly one which calls for adequate dental care for children as a foundation for prophylactic geriatrics. Through this area of service the dental profession can contribute to the greatest extent in making existing gains in life expectancy meaningful in terms of a positive definition of health. These gains will not carry their full meaning if attitudes regarding dentistry for children continue to be geared to the days of short expectation of life and care of the elderly continues to be based on a concept of mere survival. The problem of relating these two different sections of the life cycle in terms of conservation of dental health is obviously a difficult one. It involves greater resources than are available at present to the dental profession. As a consequence, there is a pressing need for action toward expanding research activities and personnel.

The increase in research activities directed toward providing measures for prevention and those for improving the technics for control of dental disease have been most encouraging. Nevertheless, it is generally recognized that activities in the field of research should be greatly expanded. With regard to measures for expansion of dental personnel, attitudes in general have not been quite so realistic. Whatever may be the prevailing attitudes toward research and personnel, a challenging situation stands out clearly. Aging of the population has brought new problems to dentistry as it has to medicine. It has brought the related problems of dental care for children and for the elderly into more prominent positions in the area of dental need of the public. Furthermore, this need must now be defined not only in terms of dental disease or deficiency alone, but also on the basis of their implications with regard to food habits, newer standards of nutrition and a positive definition of health.—*416 Huntington Avenue.*

Experiment in Dental Hygiene.—In 1938 the municipal authorities in Oslo started a health demonstration in the northern quarter of the town with a population of some 70,000. A group of doctors, dentists and nurses, as well as experts in household economy and gymnastics, carried out various activities on behalf of mothers and children. Here reference will be confined to a survey of dental caries based on quarterly examinations of all the children in the district from the age of eighteen months to seven years. They were given a diet planned to eliminate as much as possible easily fermenting carbohydrates likely to promote acid conditions in the mouth. The mothers were also instructed in local dental hygiene. The children were classed in two groups according to whether they had or had not enjoyed the benefits of the health demonstration before they were twelve months old. A comparison showed that dental caries was about 50 per cent less extensive in certain age groups among the children under the influence of the health demonstration than in the control group.—*"Foreign Letters." J.A.M.A. 133:263, January 25, 1947.*

A FULL GOLD CROWN, CAST AND READAPTED

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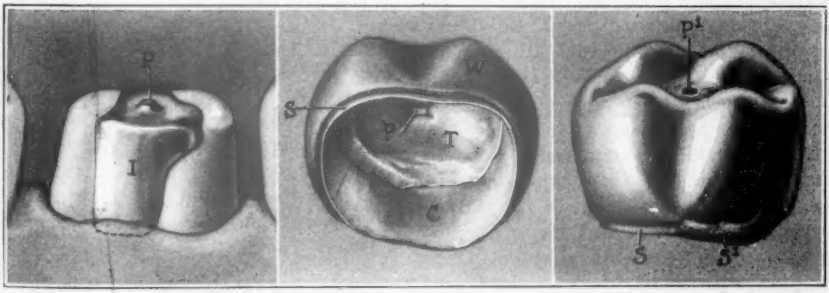
Let us assume that no other type of restoration for the tooth in question will serve better and, therefore, that a full gold crown is indicated. Let us further assume that decay has destroyed a considerable amount of the coronal portion of the tooth and that, because the decay extends beneath the gum line, a gold restoration under the prospective crown also is indicated.

The circumferential contour should be reduced, so that the greatest circumference is at the terminal line of the crown beneath the free margin. There should be a gentle taper toward the occlusal edge, and the occlusal reduction should allow for plenty of thickness of the crown.

When the tooth is thus shaped, the missing portions of the stump should be restored with a gold inlay and, at a convenient point on the inlay, a pyramid of gold should be extended occlusally to contact the opposing tooth. While the crown is being constructed, this pyramid will maintain occlusal relationships, and when the crown is finished, it will close the opening which was provided for the escape of cement and air (illustration, left).

An impression is taken of this prepared and restored stump, and a model is made of stone, copper or amalgam. On this model a pure gold coping of 32 gage is adapted. Over the occlusal portion a tin-foil cap is formed, extending just under the top edge of the coping, and a hole is cut for the pyramid. Casting wax is melted over the coping and cap and roughly shaped to approximate the tooth. Then this wax crown is placed on the tooth and oriented to the adjacent and opposing teeth (illustration, center).

When this wax crown fits satisfactorily with reference to its anatomic surroundings, the gold coping is exposed at the gingival line for a millimeter or so; that is, the wax is cut away. Also, the tin foil is stripped from the inside. The wax



Left: Prepared stump showing inlay (I) and pyramid (P). Center: Wax crown showing pure gold coping (C), tin-foil relief (T), perforation for pyramid (P'), wax (W) and exposed skirt (S). Right: Gold crown showing skirt to be readapted (S), skirt filled with 23 k. solder (S') and perforation for pyramid (P')

crown is then invested and cast.

The cast crown is relieved and fitted on the stone model, roughly polished and then returned to the mouth for correction of occlusion and contact. At this time, the exposed soft gold skirt is adapted with care and accuracy to the tooth at the gingival line, and then the crown is removed. When the crown is being removed, any undercut in the preparation will be detected because the band will drag. Any such imperfection in the preparation may be corrected and the skirt readapted. To be able at this stage to make such a correction is a most desirable feature (illustration, right).

With the crown filled with investment, high carat solder (23 k.) is sweated and flowed into the trough, over the exposed portion of the skirt, to complete the contour.

This procedure will give a gingival fit so perfect that some provision for the escape of air and cement is required in order to seat the crown. The perforation for the pyramid provides this escape; at the same time, the pyramid seals the hole when the crown is seated. A crown thus readapted never can be returned to its model. This is convincing evidence of an improved gingival fit.—*595 East Colorado Street.*

AGGLUTINATION STUDIES OF THE SMALLER ORAL TREPONEMES, BORRELIA VINCENTI AND CULTURED STRAINS OF TREPONEMA PALLIDUM

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The oral spirochetes have been known and investigated for many years, yet no investigations have been reported on serologic procedures. Little is known concerning the number of types of oral spirochetes that exist, their toxonomic relationship and the role assumed by these organisms in oral fusospirochetal infections. Serologic studies have necessarily been handicapped because of the many difficulties encountered in isolation and cultivation of these organisms. In addition, the usual technics for surface cultivation of organisms for mass production of antigen are not applicable to the oral spirochetes.

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Method

A method was developed in this laboratory for isolation and cultivation of certain of the oral spirochetes.[1] As a result, numerous strains of organisms were accumulated and serologic studies were undertaken. The agglutination test was selected as the first method of approach to the problem. It was necessary, in order to carry out this study, to grow large quantities of organisms for immunization of animals and for use as antigen in carrying out the agglutination reactions. The method of growing spirochetes in the depths of solid media is not suitable for obtaining organisms for immunologic studies as it is difficult to free

1. Hampp, E. G., A Method for Routine Isolation and Cultivation of the Smaller Oral Treponemes. *J.A.D.A.* 30:1066 (July 1) 1943.

suspensions of spirochetes from agar particles. It was necessary to develop new media and technics for this work.

Purpose

The purpose of this paper is to present some of the technics used in mass cultivation of spirochetes for performing the agglutination studies. The methods employed in immunizing rabbits against various strains of spirochetes and in performing the agglutination tests will be described. The results of agglutination reactions obtained in testing certain strains of spirochetes with homologous immune serum will be discussed.

Designation and Source

In these investigations fifteen strains of spirochetes were utilized.[2,3,4] Eight strains of the smaller oral treponemes identified as F.M., N32, J.H., M.R.B., N.G., J.B., N36 and N.F., three strains of Borrelia vincenti designated as N37, N9 and N19, and four cultured strains of Treponema pallidum (the Noguchi, Nichols, Kazan and English Reiter) denoted by the abbreviations Nog., Ni., Kaz., and E.R. were employed. The oral spirochetes were isolated in this laboratory during experiments designed to isolate and cultivate the oral spirochetes associated with Vincent's infection.

The strains of smaller oral treponemes were morphologically and culturally similar in all respects. Darkfield examination revealed organisms with closely knit, symmetrically placed coils and with fine tapering extremities. They were not double contoured. The strains of Bor. vincenti were also morphologically and culturally similar and were approximately twice the size of the smaller oral treponemes. Darkfield examination of these organisms exhibited spirochetes with large, uniformly constructed, widely spaced coils. The extremities were more abruptly tapered than those of the smaller oral spirochetes. They were not double contoured. The strains of T. pallidum show certain morphologic differences. The Nichols and Noguchi spirochetes basically consisted of organisms with fine, uniformly constructed, closely spaced spirals and delicately pointed ends, whereas the English Reiter and Kazan strains were large spirochetes with large, uniformly constructed, widely spaced coils not unlike those of Bor. vincenti. They were not double contoured.

Culture Media

Cultivation of the spirochetes was accomplished on solid and liquid media which are modifications of Huntoon's "hormone" agar.[1,5]

The solid medium is essentially a veal heart infusion from which the growth-promoting factors are extracted in the presence of a colloidal suspension of agar of 1.4 per cent concentration. "Thiopeptone" was substituted for "bacto-peptone." The medium is a low heat infusion agar and is never autoclaved but is sterilized by the fractional method.

The liquid medium was prepared in the same manner as the solid medium except that the agar concentration was reduced to 1 gm. per liter.

Mass cultures of the spirochetes for animal inoculations were made in a fluid medium consisting of 2.5 cc. of the "hormone" liquid medium and 2.5 cc. of a 5 per cent solution of Wilson 1701 W granular gastric mucin which were mixed at the time of use. Prior to inoculation of the medium, the solution was heated in a water bath to drive off residual air, cooled to 45° C. and enriched

2. Idem, Comparative Study of Darkfield and Stained Smear Technics for Identification of Oral Spirochetes on the Basis of Morphologic Characteristics. *J.A.D.A.* 32:318 (March) 1945.

3. Idem, Vincent's Infection: A Wartime Disease. Observations on the Oral Spirochetal Flora Present in Vincent's Infection. *Am. J. Pub. Health* 35:441 (May) 1945.

4. Idem, Morphologic Alteration of Smaller Oral Treponemes During Aging of Cultures: Effect of Age on Viability of Spirochetal Cultures. *J.A.D.A.* 33:201 (February) 1946.

5. Huntoon, F. M., "Hormone" Medium, Simple Medium Employable as Substitute for Serum Medium. *J. Infec. Dis.* 23:169 (August) 1918.

by the addition of 0.5 cc. of ascitic fluid and 0.5 cc. of a 1 per cent solution of glutathione. The inoculum consisted of a plug of agar removed from an actively growing culture of spirochetes with a capillary pipette. The cultures were incubated for a period of seven days at 37° C.

The medium containing mucin was not suitable for cultivating organisms to be used as antigen in the agglutination test since it contained particulate matter which was difficult to remove by centrifugation. In addition, centrifugation resulted in extensive entanglement of the organisms which caused difficulty in preparing a homogenous suspension of organisms. As a result, a clear liquid medium was sought in which the spirochetes could be grown in sufficient numbers to be used as antigen for agglutination tests. For this purpose "hormone" agar was liquefied in a water bath and dispensed in 5 cc. amounts in test tubes, chilled to 45° C. and enriched with 0.5 cc. of ascitic fluid and 0.5 cc. of a 1 per cent solution of glutathione. The tubes were slanted to maintain an agar butt of 1 cm. in depth and placed in a refrigerator to solidify and chill the agar thoroughly. They were removed from the refrigerator at the end of thirty minutes and immersed in a water bath at 40° C. to allow rapid formation of water of condensation at the bottom of the slant. The water of condensation was then inoculated with young, actively growing spirochetes, after which the tubes were plugged with rubber stoppers to prevent any evaporation of the water of condensation. Cultures were incubated in an upright position for four days at 37° C. and at the expiration of this time sufficient organisms could be obtained from each culture to perform five to eight microscopic agglutination tests.

Immunization of Animals

The animals employed for immunization were healthy rabbits obtained from the animal colony maintained at the National Institute of Health. These animals were bled and their serums tested for natural agglutinins before immunization procedures were undertaken.

The antigen for immunization of the animals was prepared as previously described. The organisms were evenly dispersed through the medium by gentle agitation of the cultures. Graded amounts of the whole cultures were utilized for intravenous inoculation of the rabbits. With the exception of the strains of T. pallidum, which were killed by 0.1 per cent formalin, viable cultures were employed in all instances.

Two groups of rabbits were employed for immunization and two animals were immunized against each strain of organisms. The first group of rabbits was immunized with strains F.M., N32, N9, N19, N37, Ni., Nog., E.R. and Kaz. These animals received a series of three courses of intravenous inoculations; the first course consisted of two and the second and third courses of four injections each. A total of 22 cc. of seven day old culture was given to each animal. The second group of animals was immunized with strains M.R.B., J.B., N36, J.H., N.G. and N.F. These animals received two courses of intravenous inoculations of four injections each. All animals received a total of 19 cc. of seven day old culture.

The schedule for immunization in both groups of animals consisted of courses of daily intravenous inoculations of suspensions of spirochetes. The courses were separated by intervals of ten days. Bleedings were made from the heart at the end of the rest period and the agglutination titre of the serum was determined.

The Agglutination Test

The microscopic agglutination test employed in this investigation was essentially that described for Leptospira

icterohaemorrhagiae.[6,7] This method is more expedient than the macroscopic agglutination test, for smaller amounts of antigen can be used in performing the test. This is a decided advantage because of the difficulties encountered in obtaining spirochetes for this purpose.

In performing microscopic agglutination tests with spirochetes it is essential that all glassware, diluents and serum be sterile. The immune serum was diluted in 0.85 per cent aqueous solution of sodium chloride in serial tenfold dilutions from a starting point at 1:5 to an end point of 1:500,000. Living organisms were employed as antigen for the agglutination test. The organisms, grown in the water of condensation, as described, were suspended in physiologic salt solution at an arbitrary concentration.

Porcelain spot plates were used for mixing antigen and the various dilutions of serum and for incubation. One-tenth cubic centimeter of the various dilutions of immune serum was placed in each of six depressions in the spot plates and an equal quantity of saline suspension of antigen was added to each serum dilution. The addition of an equal quantity of antigen to the dilutions of serum changes the dilutions to 1:10 to an end point of 1:1,000,000. A control consisting of 0.1 cc. of physiologic saline solution and 0.1 cc. of a saline suspension of the organisms used in the test was placed in one of the depressions in the porcelain plate. All antigen-serum mixtures and controls were thoroughly mixed with a sterile platinum loop. The plates were then placed in moist chambers and incubated at 32° C. for three hours before being examined.

A platinum wire with a loop approximately 2 mm. in diameter was used to place a small drop of the various serum-antigen dilutions on a clean glass slide. Cover slips were not used on these preparations. Examinations were made immediately, using a darkfield microscope at a magnification of 150 diameters. Rapid examinations were made by moving the last agglutination out of the field of vision and placing another drop of serum-antigen dilution under the objective on the same slide without changing the focus of the microscope. One slide may be used for about thirty to forty tests.

Microscopic Findings

Little difficulty was encountered in discriminating between agglutination and pseudo-agglutination of organisms. In agglutination most of the organisms in the field gathered into rather large clumps and were uniformly distributed throughout the field of vision. In the pseudo-reactions the organisms were found to adhere to foreign particles and to contain very few bacterial cells. The clumps were very small in comparison to those of agglutinated cells.

Figure 1 demonstrates a control suspension of spirochetes in physiologic salt solution and a positive agglutination reaction. The control shows quite clearly the even distribution of organisms throughout the microscopic field and there is no tendency to spontaneous agglutination. (Suspensions in physiologic saline solution of all spirochetes used in this study have been kept as long as eight hours without showing any evidence of spontaneous agglutination.) The agglutinated specimen shows very clearly the characteristic clumping of the spirochetes. The organisms are so densely packed that, in the center of the clumps, individual spirochetes cannot be identified and these areas appear granular at this magnification. However, at the periphery of the clumps the organisms are interwoven into a loose, lace-like network and the structure of the individual cells can be made out. None

6. Schüffner, W. A. P. and Mochtar, A., Versuche zur Aufteilung von Leptospirenstammen mit einleitenden Bemerkungen über den verlauf von Agglutination und Lysis. *Cent. f. Bakt.* (Abt. 1), 101:405, 1927.

7. Meyer, K. F.; Stewart-Anderson, B., and Eddie, B., Canine Leptospirosis in the United States. *J. Am. Vet. M.A.*, 95:710, 1939.

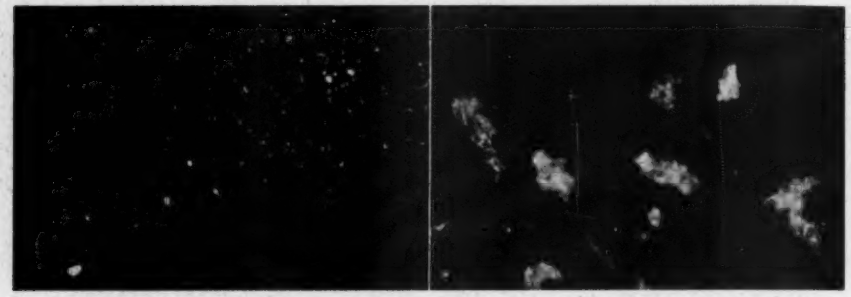

Fig. 1.—Darkfield preparation of a control suspension of spirochetes (Strain N37) in normal salt solution and of a positive agglutination reaction at a dilution of 1:10,000 (x 150)

of the organisms used in this study, with the exception of E.R. and Kaz., showed evidence of lysis as encountered in high dilutions of serum in positive tests for L. icterohaemorrhagiae. With strains E.R. and Kaz. there was some evidence of lysis in the dilutions of homologous immune serum at 1:1,000 or above since there was apparently a diminution in the number of organisms. Definite proof was lacking because all organisms were not lysed.

Statistical Findings

Results of the highest agglutination titres attained with the serums of immunized rabbits when tested against their homologous organisms are presented in Tables 1 and 2.

Table 1 shows the agglutination titres attained with serums of rabbits that had been immunized with three separate courses of two, four and four intravenous injections consisting of 3, 7 and 12 cc., respectively, of seven day old cultures of certain strains of spirochetes. The serums obtained after the first course of injection show an average agglutination titre of 1:1,000. Titres of 1:10,000 were obtained with the E.R., Kaz. and N9 serums. After the second series of injections the agglutination titres of the rabbit serums were not altered with the exception of serums N37 and N9 which showed a tenfold increase. The greatest change in agglutination titres was obtained after the third course of intravenous injections of rabbits. As shown in the table, the titres ranged from 1:10,000 to 1:1,000,000.

Table 2 shows the agglutination titres attained with serums of rabbits that had been immunized with two separate courses of four intravenous inoculations, each of which consisted of 7 and 12 cc., respectively, of seven day old cultures of strains of the smaller oral treponemes. As shown in the table, the titres of the serum attained after the first course of

Table 1.—Highest agglutination titres attained in serums of rabbits immunized with spirochetes when tested against homologous organisms

Strain of Spirochetes	*Highest Titre Attained After:		
	Course 1	Course 2	Course 3
F. M.	1:1,000	1:1,000	1:1,000,000
N32.	1:1,000	1:1,000	1:10,000
E. R.	1:10,000	1:10,000	1:1,000,000
Kaz.	1:10,000	1:10,000	1:1,000,000
Nog.	1:1,000	1:1,000	1:10,000
Ni.	1:1,000	1:1,000	1:10,000
N37.	1:1,000	1:10,000	1:100,000
N19.	1:1,000	1:1,000	1:10,000
N9.	1:10,000	1:100,000	1:100,000

*Each rabbit received three courses of intravenous inoculations with seven day old cultures of spirochetes indicated: course 1—2 injections with total of 3 cc., course 2—4 injections with total of 7 cc. and course 3—4 injections with total of 12 cc.

Table 2.—Highest agglutination titres attained in serums of rabbits immunized with spirochetes when tested against homologous organisms

Strain of Spirochetes	*Highest Titre Attained After:	
	Course 1	Course 2
N. G.	1:1,000	1:1,000
N. F.	1:1,000	1:1,000
M. R. B.	1:1,000	1:1,000
N36.	1:1,000	1:1,000
J. H.	1:1,000	1:10,000
J. B.	1:1,000	1:1,000

*Each rabbit received two courses of intravenous inoculations with seven day old cultures of spirochetes indicated: course 1—4 injections with a total of 7 cc. and course 2—4 injections with a total of 12 cc.

injections, when tested with homologous organisms, were 1:1,000 in all instances. After the second course of inoculations the titres of the serums were not altered with the single exception of J.H. which exhibited a tenfold increase.

Nonspecific agglutination occasioned by constituents of the media was ruled out by absorbing immune serum with uninoculated media. This procedure did not cause the specific agglutination titre to decrease.

The results obtained, concerning the immunologic response elicited in rabbits after their intravenous inoculation with T. pallidum and oral strains of spirochetes, adequately demonstrate that these organisms are highly antigenic. This finding is emphasized by the initial response in agglutination titre attained in rabbits after two intravenous inoculations with a total of 3 cc. of seven day old cultures of spirochetes. The majority of final agglutination titres shown in both tables are probably not the exact end points because of the latitude existing between tenfold dilutions. Undoubtedly, intermediate dilutions would show much higher titres. It was found that many of the serum-antigen tests showed strong clumping in the final end point observed but that when checked in the next tenfold dilution they exhibited questionable agglutination. These readings were not recorded. Preliminary agglutination tests with heterologous strains of spirochetes seemingly indicate that the test is specific.

Summary

1. A medium was devised for routine mass cultivation of spirochetes to be used for intravenous injection into rabbits.

2. A method of cultivation of spirochetes in water of condensation of agar slants was shown to produce antigens which were suitable for use in microscopic agglutination tests.

3. Strains of T. pallidum and various oral spirochetes were shown to be highly antigenic.

4. The microscopic agglutination test as employed for studies of Leptospira was found to be applicable to the organisms under consideration.

5. The agglutination titres of immune serum, when tested against homologous strains of spirochetes, ranged between dilutions of 1:1,000 and 1:1,000,000.—*National Institute of Health.*

PENICILLIN IN THE TREATMENT OF VINCENT'S INFECTION

Walter Areinoff, D.D.S., Mount Vernon, N. Y.

In World War I the incidence of Vincent's infection was found to have increased markedly in members of the armed forces overseas; so much so, in fact, that it formed a basis for the popular name of trench mouth. In this war, too, dentists overseas found that much of their time was spent in treating the disease, and with the inability of the ambulatory patients to acquire the proper foodstuffs and to carry out the proper hygienic measures, owing to military necessities, these patients required long and tedious series of treatments, stretching out for one, two or three weeks before a cure could be effected. Aside from the discomfort and inconvenience to the patient, the expenditure of time caused a serious loss of military man hours as well as a cluttering up of the dental clinics. With the advent of penicillin as a possible remedy for Vincent's infection, a new field of investigation was opened which promised to alleviate the situation.

Theory and Technic

Reports of several groups of workers demonstrate conclusively the value of penicillin in the treatment of acute and chronic phases of Vincent's infection of the mouth and throat. However, these studies concerned themselves with the intramuscular injection of the drug over a twenty-four hour period for several days, which necessitated that the patient be hospitalized, a practice that is certainly not applicable to the dental officer in a field unit or the average dentist in his own office. Therefore, to gain the full benefits of penicillin therapy, it seemed necessary to devise a technic which would achieve the same results while limiting the time necessary for treating the patient to an eight or ten hour interval.

One such attempt had been the topical application of penicillin in a suitable vehicle, but this treatment had the disadvantages of all topical applications: (1) the dilution and carrying away of the medicament by the oral secretions; (2) the inability to contact the offending organisms over an extended period of time; (3) the uncertainty of contacting all of the organisms in deep-seated pockets and inaccessible areas, and (4) the failure to eliminate foci of reinfection if they are distant from the areas treated, as, for example, in the tonsils. On the other hand, systemic introduction of the penicillin obviates these disadvantages and, in addition, permits a continuous action for the length of time that the medicament is in the blood stream. It also reduces for each patient the actual length of time spent in the chair, which is always an important consideration to the civilian dentist as well as the dental officer.

Objections

There are several commonly voiced objections to the injection of penicillin. The most significant ones are: (1) need for refrigeration of the penicillin; (2) possibility of a systemic reaction following the injection, and (3) occasional hesitancy of the patient to submit to this apparently drastic type of treatment.

With the continual improvement of the manufactured product, however, the first two objections are gradually disappearing. Penicillin is now available in a form that is considered stable enough to remain active at ordinary room temperatures; it is generally agreed that the reactions which followed the injection of penicillin were largely the result of impurities in the manufactured product, and with improvements in the preparation fewer reactions are being seen. As to the patient's fear, it was found that most patients were uncomfortable enough to welcome anything that held promise of immediate relief.

Basis for Present Study

Earlier studies had demonstrated that 100,000 units of penicillin sodium given intramuscularly over a twenty-four hour period, until the clinical and microscopic symptoms disappeared, was capable of effecting a cure in approximately three days. The questionable point was whether it was necessary to maintain the penicillin level in the blood stream for that length of time. Penicillin's action is believed to be bacteriostatic rather than bacteriocidal and is thought to have its effect through the disturbance of reproduction of the organisms; so it was possible that the initial series of injections alone destroyed the ability of the organisms to overwhelm the defensive mechanisms of the tissues and were therefore the effective injections. It was also possible that the time necessary for the symptoms and the organisms to disappear after that depended upon the time necessary for the healing processes to restore the tissue to normal and for a culture of organisms no longer virulent to disappear from an unfavorable medium. (Theoretically, then, this would explain the three or four day interval necessary for the symptoms and organisms to disappear after initiation of the previous types of treatments.)

Therefore, 100,000 units of penicillin, with distilled water as the vehicle, was injected intramuscularly (in the deltoid area) over an eight hour period; that is, one injection of 20,000 units was given every two hours for five doses. This treatment was followed twenty-four hours later by measures to alleviate all conditions which might cause a lowering of the tissue resistance, including a thorough scaling and polishing of the teeth and examination for and correction of such conditions as overhanging fillings, cervical cavities and traumatogenic occlusion. (Ordinarily, with the usual treatment previously given for Vincent's infection, manipulation of the oral tissues twenty-four hours after the beginning of treatment might be avoided for two reasons: the sensitivity of the gums would discourage it, and there would be the danger of introducing the still-virulent organisms into the blood stream. However, with the use of this technic, the organisms are theoretically impotent twenty-four hours after the first treatment, and, as will be shown later, the sensitivity of the gingivae has been reduced sufficiently to permit conducting the manipulative treatment painlessly. Therefore, it was deemed permissible as well as advisable to follow this course of treatment.)

In the first group of approximately 12 patients, microscopic studies were made of samples of debris taken daily, before treatment, from deep-seated regions, but this practice had to be discontinued because of military necessity. No other treatment was used. Patients were permitted to smoke and to carry on their normal daily routine.

Results and Interpretation

The first noticeable results often occurred after the third or fourth injection. The patients reported a definite decrease in the sensitivity of the gingivae, and a slight change in the red and angry appearance of the gums could be frequently noted although the objective

symptoms remained substantially the same during the course of the injections. In the small group that I was able to study microscopically, the causative organisms almost invariably remained during this eight hour period. However, on the following day, there was an almost complete absence of the gingival sensitivity of every patient treated. Scaling was performed with no more discomfort than that of the normal prophylactic treatment. Slightly less than 50 per cent of the patients exhibited normal microscopic smears at this time, but all smears showed a marked reduction in the number of organisms seen in previous studies. The redness, edema and ulceration of the gingival margins were still present to a certain degree but they were definitely improved.

After the corrective treatment, the patients might well have been divided into two groups: (1) approximately half of the patients studied returned on the third day demonstrating complete disappearance of symptoms, subjectively, clinically or microscopically, and (2) the remainder of the patients showed further definite improvement on this visit but required one more visit before the complete absence of symptoms could be proved. It was noted that the more severe conditions were in this latter group. The additional day required to effect a cure apparently was necessitated by the greater amount of time needed for healing of the tissues involved. The microscopic studies were continued daily for the remainder of the week and then once every week for three weeks. In every case the smears continued to be negative. Every patient followed this general pattern: loss of discomfort and a marked clearing of symptoms within twenty-four hours and a complete recovery within seventy-two to ninety-six hours, accompanied with the ability of the patient to follow his normal daily routine and, in the armed forces, to acquit his military responsibilities.

Reports of Cases

There were a few singular cases which revealed points relevant to this study.

Case 1.—A Wac officer, aged 22, with a mildly acute attack of Vincent's infection, gave a history of repeated attacks which had resisted treatment for a number of years. Her mandibular teeth were in distal relationship to the maxillary teeth, and the anterior region demonstrated a marked open bite. In addition, the patient was a habitual mouth breather. Treatment for the oral fusospirochetosis was instituted. Results followed the general pattern that has been outlined, and a cure was effected by the time of the fourth visit. Approximately one week later, however, the patient returned with a slight redness along the anterior gingival margins. There was little edema and no ulceration, and no pathologic organisms could be demonstrated microscopically. Another series of penicillin sodium injections was carried out but this seemed to have no effect on the gingivitis. (It was thought, therefore, that the penicillin treatment had cured the Vincent's infection but that the gingivitis to which the patient's congenital anomalies predisposed her was unaffected by penicillin and would have to be treated by other means such as stimulation by massage and proper toothbrushing.)

Case 2.—An enlisted man showed the usual symptoms of an acute attack of Vincent's infection of the gums. Treatment was instituted and the patient was directed to return on the following day for scaling, but failed to do so. Three days later, examination disclosed a definite improvement in the original symptoms but there still remained a slight edematous and congested appearance along the gingival margins. Sensitivity was gone and the smear still showed that some fusiform bacilli and Vincent's spirochetes were present. Scaling was performed as well as corrective treatment for overhanging fillings. After the treatment, the patient's symptoms followed the usual pattern for their disappearance, and a cure was effected two days later.

Several cases of this same type were seen during the course of study. Findings in these cases suggested that penicillin therapy alone was not enough but that measures to enhance the general resistance of the tissues were necessary as well. This theory was based on the knowledge that in almost every mouth the

organisms thought to cause Vincent's infection can be demonstrated; therefore, unless conditions which lowered the tissue resistance and predisposed to the outbreak of present symptoms were treated, the oral situation remained much the same and any future contact with an offending organism was easily capable of causing the continuation of the symptoms.

Case 3.—An enlisted man gave a history of having used a Japanese tooth paste preparation for a period of three days. His gums were red, angry looking and congested. The breath had a particularly fetid odor and the patient complained of a similar taste. The outstanding symptoms were the generalized sloughing of the gums and the presence of a greyish-white membrane irregularly throughout the entire mouth. The margins had ulcerated and receded and there was an associated severely uncomfortable sensation. It was impossible to analyze the tooth paste for the presence of a caustic substance, nor was it possible to examine a specimen microscopically. Twenty thousand units of penicillin sodium was injected every two hours for five doses, totaling 100,000 units, and a mouthwash of equal parts of 3 per cent hydrogen peroxide and warm normal saline solution was prescribed. There was complete absence of pain when the patient returned the next day, and careful scaling was performed. Three days later all symptoms had disappeared. There remained only the slight recession of the gums.

Case 4.—An officer appeared at the clinic with all the symptoms of a severely acute attack of Vincent's infection of the gums. In addition, his oral pharynx was congested, raw and painful and his tonsils were noticeably enlarged. On the surface of both tonsils large, yellowish-white ulcerated areas could be seen. The patient's temperature (taken orally) was 102 F. Treatment was carried out in conjunction with the medical department. In this case, the usual dosage was doubled and 40,000 units of penicillin was injected every two hours for five injections, totaling 200,000 units. The patient's gingival discomfort had ceased by the next day and scaling was performed. Two days later the patient's throat, tonsils and gums were completely normal and he was dismissed as cured. I felt that this case and other similar cases that followed dramatically demonstrated the advantages of injection of penicillin over its topical administration; for, by injection, the possible focus of reinfection was eliminated as well.

Comment

During this study, I observed one other point which I believe is worth recording. One small group of patients was treated by injection of the usual dose of penicillin into the gluteal rather than the deltoid muscle. This had the apparent advantage of causing the patient less discomfort than the injection in the arm. However, it was found, that, although a cure was effected, the time required was increased to approximately five or six days. In consultation with the medical department I was unable to provide an explanation of this time lag, but it was discovered that the medical department was finding the same result after their treatment of other diseases with penicillin. The remainder of the patients treated in this study were therefore given injections in the deltoid region with the results that have been outlined.

Conclusion and Summary

One hundred thousand units of penicillin sodium daily, divided into five doses and injected intramuscularly every two hours, cured acute and chronic Vincent's infection within three to four days after the start of treatment.

Apparently a relationship exists between enhancement of the resistance of oral tissues to disease and the ability of the penicillin to effect a cure quickly.

The advantages of this shorter injection technic seem to be (1) the speedy relief of the patient's discomfort; (2) the demonstrably rapid cure produced; (3) reduction of the length of time spent in the chair; (4) elimination of possible areas of reinfection while the primary symptoms are being cured, and (5) ability of the patient to maintain his normal daily routine during the treatment.—*2 Gramatan Avenue.*

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EDITORIALS

THE NEED FOR UNIFORMITY IN DENTAL NOMENCLATURE

THE recent adoption by the Committee on Nomenclature of the American Dental Association of a standardized method for the symbolic designation of teeth is to be commended. The simplicity and practicability of the method warrant its early acceptance by the dental profession.

At least seven methods of designating teeth are now in use, including one recommended by the Committee on Nomenclature in 1933. For years, this lack of uniformity has resulted in confusion, irritation and wasted effort. It is hoped that the Committee's latest recommendation, which appears on page 647 of this issue of THE JOURNAL, will be put into operation as standard procedure as rapidly as possible. The method recommended is neither new nor complicated. It consists of dividing the dental field into quadrants by vertical and horizontal lines. The permanent teeth in each quadrant are designated numerically in relation to these lines. The deciduous teeth are designated similarly by letters. Thus, $\overline{|3}$ indicates the lower left permanent cuspid, and $\underline{b|}$ indicates the upper right deciduous lateral incisor.

The adoption of this standard method of tooth designation is particularly timely. An increasing number of hospitals are establishing dental departments and dental internships. An increasing number of communities are establishing health centers and dental health programs for children. Forensic dentistry is better understood now than previously, and the use of teeth as a means of identification is becoming common practice. For these as well as other reasons a uniform method of designating teeth should be universally adopted.

The standardization of tooth designation, although important, is but a small facet of the larger subject of nomenclature. A correct nomenclature is just as essential to the progress of dentistry as it is to the development of any other science.

The first notable effort to standardize American dental terms was made by Chapin A. Harris in 1849. His *Dictionary of Dental Science* served as a standard until G. V. Black's report to the Columbian Dental Congress in 1893. Black's report served as a foundation on which the profession's present nomenclature was built.

In 1921, the National Dental Association appointed a standing committee on dental nomenclature which, with changes in personnel, served faithfully and well for many years. However, the last comprehensive report of the Committee on Nomenclature was made in 1937. Since then, only two or three minor reports have been submitted.

Unfortunately, progress in dental terminology has not kept pace with progress in dental technology or dental research. Indeed there is a tendency for some leading dental writers to disregard certain terms and symbols which, after careful deliberation, have been adopted by the Committee on Nomenclature. In some instances, the objections raised to certain terms are based on personal prejudice or pride of authorship.

Another difficulty to be overcome is the inclination on the part of certain specialties within the profession to adopt terms without first submitting them for approval to the Committee on Nomenclature of the American Dental Association. Certainly, each dental specialty should endeavor to improve its own terminology, but there should be one supreme court within the profession which would pass final judgment on all scientific dental terms. Under the present Constitutional and Administrative Bylaws, that court is the Committee on Nomenclature. If and when the proposed new constitution is adopted, this function will be transferred to the Bureau of Library and Indexing Service. Regardless of which committee or bureau is assigned this responsibility, the task must be undertaken seriously. It is high time for reexamination of dentistry's nomenclature, definition of new terms and the modernization of the dental glossary.

DENTAL, MEDICAL, NURSING AND HOSPITAL SERVICES FOR RURAL AREAS

At the second annual National Conference on Rural Health in February, sponsored by the American Medical Association, the following recommendations which would aid in bringing physicians and dentists to, and holding them in, rural areas were made:

1. That state and county health councils be established, to be composed of representatives of medical, dental, farm and other organizations concerned with the rural health problem. These councils should study the health needs and develop plans and programs for improvement of rural health in each area.

2. That adequate health facilities be developed in rural areas where a competent survey has shown that these facilities are needed. In order to attract and retain physicians and dentists in rural areas, certain fundamentals seem necessary:

(a) the provision of adequate medical facilities; (b) the provision of a reasonable income for physicians and dentists in these areas; (c) stimulation of practice in groups; (d) a concomitant improvement of community educational and cultural facilities; (e) extension of good roads, and (f) the development of understanding on the part of the community of its responsibilities with reference to all health matters.

3. That a program of preventive medical and dental care be developed through provision of funds in the various states. This program could be best implemented by a sound system of health education in the schools.

4. That more emphasis be placed on the economic problems of medicine in the medical school curriculum.

One of the greatest problems that confronts the health profession today is that of supplying dental, medical, nursing and hospital services for rural areas. According to a 1940 report, approximately 20,000,000 people live in rural communities. Eleven thousand communities with less than 1,000 population have only 151 hospitals, 85 per cent of which have a capacity of less than fifty beds. In the entire country, rural areas outside of the villages have but 90 hospitals and more than 50 per cent of these have a capacity of less than fifty beds.

Small hospitals usually mean inadequate medical and nursing staffs and inadequate facilities. The difficulty encountered by many rural communities in attracting and holding competent physicians and nurses is well known.

The scarcity of dentists in rural areas has frequently been reported. In 1942, 215 counties had no dentist. One hundred and forty-nine counties had a ratio of 10,000 to 55,000 persons to 1 dentist; 497 counties had a ratio of 5,000 to 10,000 persons to 1 dentist, and 1,302 counties had a ratio of 2,000 to 5,000 persons per dentist.

People who live in rural communities do not lead charmed lives. Like the urban dwellers, they need and should have adequate medical and dental service. Practical methods of supplying that service have not as yet been developed, although the subject has received considerable thought and discussion.

It becomes increasingly apparent that furnishing adequate health services to people residing in rural areas is no simple matter. It involves more than increasing the number of dental and medical graduates. It involves more than the erection of health centers or the procurement of office space and facilities. It was the consensus of those in attendance at the conference that "the problem of supplying health services to those in sparsely settled regions is intimately tied in with the whole social and economic status in rural areas, and the maintenance of a reasonable and stable income of rural people is the underlying factor in the achievement of these objectives."

A. D. A. AFFAIRS

ELEVEN SECTION COMMITTEES PLAN SCIENTIFIC PROGRAM

Plans for the scientific session to be held at the eighty-eighth annual meeting of the American Dental Association August 4-8 in Boston are being set up by eleven section committees.

Because of limited facilities in Boston, it was decided by the section officers to merge the section on children's dentistry with the section on orthodontics.

The list of section committees follows.

Dentistry for Children and Oral Hygiene, Kenneth A. Easlick, Ann Arbor, Mich., chairman; Robert A. Downs, Denver, vice-chairman, and Ralph L. Ireland, Lincoln, Neb., secretary. *Full Denture Prosthesis,* W. W. Hurst, Cleveland, chairman; Homer Simpson, Dallas, Texas, vice-chairman, and Carl O. Flagstad, Minneapolis, secretary.

Histology, Physiology, Pathology, Bacteriology and Chemistry (Research), Hermann Becks, San Francisco, chairman; Basil G. Bibby, Boston, vice-chairman, and Robert G. Kesel, Chicago, secretary. *Hospital Dental Service,* W. Harry Archer, Pittsburgh, chairman; Robert L. Heinze, Brooklyn, vice-chairman, and J. Frank Hall, Indianapolis, secretary. *Operative Dentistry, Materia Medica and Therapeutics,* J. Bernard Hutcherson, Louisville, Ky., chairman; Ernest Granger, Mt. Vernon, N. Y., vice-chairman, and Alexander W. Jeffery, Seattle, secretary.

Oral Surgery, Exodontia and Anesthesia, George W. Christiansen, Detroit, chairman; Leslie M. FitzGerald, Dubuque, Iowa, vice-chairman, and Frank B. Hower, Louisville, Ky., secretary. *Orthodontics,* L. B. Higley, Iowa City, chairman; Frank W. Nash, Scranton, Pa., vice-chairman, and F. Copeland Shelden, Kansas City, Mo., secretary.

Partial Denture Prosthesis, Oliver C. Applegate, Ann Arbor, Mich., chairman; Charles Peterka, Minneapolis, vice-chairman, and A. O. Klaffenbach, Iowa City, secretary. *Periodontia,* Hunter S. Allen, Birmingham, Ala., chairman; Harold J. Leonard, New York, vice-chairman, and J. A. Jacobsmeyer, St. Louis, secretary.

Practice Management, Gaylord J. James, Cleveland, chairman; Burt B. Ide, Baltimore, vice-chairman, and Cecil H. Bliss, Sioux City, Iowa, secretary. *Radiology,* H. C. Fixott, Portland, Ore., chairman; L. R. Main, St. Louis, vice-chairman, and LeRoy M. Ennis, Philadelphia, secretary.

HOTEL RESERVATIONS FOR BOSTON MAY BE MADE NOW

The Boston Convention Bureau is now accepting requests for hotel reservations for the eighty-eighth annual meeting of the American Dental Association. The meeting will be held August 4-8 in Boston.

A coupon which must be used in requesting hotel reservations appears on pages A22 and A23 of this issue of THE JOURNAL, together with a listing of Boston hotels and rate ranges. The coupon must be mailed to the Convention Bureau, which will handle all hotel reservations for the meeting.

Confirmation of reservations will come from the hotel accepting the reservation. All reservations will be subject to reconfirmation by the holder a month before the date of the meeting. Responsibility for the reconfirmation of the reservation will be on the holder.

A card will be mailed by the Convention Bureau to all holders of hotel reservations in late June. The card must be filled out indicating whether the reservation is confirmed, altered or cancelled. Failure to return the card within ten days may result in cancellation of the reservation at the option of the Convention Bureau.

It is hoped that sufficient rooms for all official delegates will be available in the Hotel Statler, headquarters hotel for the meeting. The House of Delegates and the

Board of Trustees will hold their sessions in the Hotel Statler, and the scientific meeting will be held in Mechanics Hall.

A.M.A. APPOINTS COMMITTEE FOR DENTAL AND MEDICAL RELATIONS

The board of trustees of the American Medical Association has authorized the appointment of a committee of five to cooperate with a similar committee of the American Dental Association for the purpose of bringing about closer cooperation between physicians and dentists, according to George F. Lull, secretary and general manager of the American Medical Association.

The committee was authorized at the February meeting of the board in response to a resolution introduced at the June meeting of the House of Delegates of the American Medical Association. Members of the committee of five are Dr. Lull, L. H. Bauer, and the members of the executive committee of the board of trustees, E. L. Henderson, E. E. Irons and W. F. Braasch.

C. Raymond Wells, Brooklyn, is chairman of the Committee on Dental and Medical Relations of the American Dental Association, which was appointed by the Board of Trustees after the eighty-seventh annual meeting of the American Dental Association in Miami, Fla. Other members of the committee are Horace L. Cartee, Miami; L. H. Jacob, Peoria, Ill.; Harold J. Noyes, Portland, Ore., and J. Ben Robinson, Baltimore.

DENTAL SOCIETIES

AMERICAN ACADEMY OF DENTAL MEDICINE FOUNDED

The American Academy of Dental Medicine will hold its first annual meeting June 15 in New York.

The sessions will include business meetings, clinics and round table discussions. All dentists are invited to attend. The academy was founded with the objectives of promoting the study and dissemination of knowledge of the cause, prevention and control of diseases of the teeth and their supporting and related structures, and of fostering a better scientific understanding between the fields of dentistry and medicine.

The academy will publish the *Journal of Dental Medicine*. Officers are Allan N. Arvins, New York, editor; Sidney Sorrin, New York, president-elect; Samuel Charles Miller, New York, president; J. Lewis Blass, New York, treasurer, and William M. Greenhut, New York, secretary.

For additional information write Sidney Sorrin, 745 Fifth Ave., New York 22.

NORTHWEST DENTAL MEDICINE CONFERENCE TO OPEN MAY 18

The annual meeting of the Northwest Conference in Dental Medicine will be held May 18-21 at Harrison Hot Springs, B. C., Canada, according to an announcement by C. R. Hallman, Vancouver, secretary.

Among the speakers on the agenda will be Barnhard Gottlieb, professor of oral pathology and research, Baylor University, Dallas, Texas, and Maury Massler, assistant professor of pedodontics and director of the Child Research Clinic, College of Dentistry, University of Illinois.

Members of the American Dental Association are invited to participate in the meeting. Further information may be obtained by writing Dr. Hallman, 4298 Dunbar St., Vancouver, B. C., Canada.

CANADIAN DENTAL ASSOCIATION TO HOLD MEETING JUNE 24-27

The 1947 National Dental Convention of the Canadian Dental Association will be held June 24-27 in Digby, Nova Scotia, Canada, according to an an-

nouncement by G. M. Logan, chairman, publicity committee.

The program for the meeting has not yet been announced. Any dentist who wishes to attend the meeting should apply immediately for a reservation by writing to Dr. H. S. Crosby, Birks Bldg., Halifax, Nova Scotia, Canada.

NEW YORK DENTAL HYGIENISTS TO HOLD MEETING MAY 2

The Dental Hygienists' Association of the City of New York will hold elections at a meeting May 2 in New York, according to an announcement by the association. Annual reports of the executive board and committees will be made.

DENTAL HEALTH WORKSHOP HELD BY LOUISIANA SOCIETY

A workshop in dental health planning sponsored by the Council on Dental Health of the Louisiana State Dental Society in cooperation with the Louisiana State Board of Health was held recently in New Orleans.

Leo J. Schoeny, New Orleans, presided over the opening sessions of the three day workshop, and greetings were extended by Wallace M. Nicaud, president of the Louisiana State Dental Society. Allen O. Gruebbel, executive secretary of the Council on Dental Health, American Dental Association, spoke on "The Objectives of the Workshop."

Other speakers were Alton K. Fisher, School of Dentistry, Loyola University, New Orleans, on "Present Status of Preventive Procedures"; James S. Gray, Shreveport, on "Dental Needs of the Nation"; Thomas L. Hagen, U. S. Public Health Service, New Orleans, on "Louisiana's Dental Needs and Status of Care," and Thomas D. Speidel, dean, School of Dentistry, Loyola University, New Orleans, on "Dental Manpower in the Nation and in Louisiana."

Also on the agenda were Roy L. Hyde, head of the department of social sciences, Southeastern Louisiana College, on "The Ability to Pay for Dental Services," and Paul Cook, chief, dental health section, Louisiana State Board of Health, on "The Louisiana Dental Health Program."

Speakers on a panel for proposed solutions were M. F. Jarrell, Alexandria, La., on "Compulsory Health Insurance"; William C. Epstein, Monroe, La., on "Voluntary Prepayment Plans"; J. Roy Bass, Lake Charles, La., on "Post Payment Plans"; Wynn R. Irvine, New Orleans, on "Children's Bureau Bill"; Norman J. Folse, Raceland, La., on "The Taft Proposal," and Earl J. Breaux, Baton Rouge, La., on "The A.D.A. Program."

After the opening speeches, the meeting was split into four discussion groups to consider specific problems in the planning of community health programs. Reports and recommendations from the four groups were presented for discussion and consideration by the entire meeting on the last day.

OHIO WORKSHOP RECOMMENDS PROGRAM OF DENTAL HEALTH

The first of a series of workshops in dental health planning was held December 6-8, 1946, in Columbus, Ohio, under the joint sponsorship of the Council on Dental Health of the Ohio State Dental Society and the Ohio State Department of Health.

The workshop meeting adopted a number of recommendations in dental health planning on the basis of reports prepared by four discussion groups. All the recommendations were adopted subject to the approval of the Ohio State Dental Society.

A summary of the results of the workshop follows.

1. The number of dentists should be increased to meet the demand for dental services.

2. The dentist-population ratio should be decreased to 1:1,400 in the state of Ohio.

This would increase the number of dentists from 3,800 to approximately 5,000.

3. To secure an even distribution of dentists in relation to the distribution of population and to geographic location, existing educational facilities for dental education should be expanded. Dental schools should select students on a geographic basis, presuming that graduates will return to their local districts. Dental societies should endeavor to stimulate the interest of civic and other groups in projects to establish scholarships for dental students in districts in which the dentist-population ratios are acutely out of proportion.

One-year internships in the practice of children's dentistry for dental graduates should be established.

4. Councils on dental health of component societies should try to interest qualified young people in the profession of dentistry by student-dentist meetings, contacts through vocational guidance departments of rural high schools and investigation of the possibility of establishing scholarships, student loan funds and subsidies. The Ohio State Dental Society should establish a dental student loan fund.

5. The members of the profession should be encouraged to make maximum use of ancillary aids, and the supply of these aids should be increased to meet the demand.

6. The training standard for hygienists established by the Council on Dental Education of the American Dental Association and the standards for the dental technician and the assistant to be established by the Council should be followed.

7. The dental profession should participate actively in the establishment of community dental health programs. The initial programs should be organized on a small scale with a view toward gradual expansion as additional facilities become available.

8. Long range planning to develop community dental health programs should be based on the development of comprehensive education for the dental profession and the public, the adoption of restorative and corrective measures and the expansion of dental research.

Health education should be promoted with the cooperation of other agencies. The expansion of courses in dentistry for children in the dental schools of Ohio should be encouraged.

9. Because of limited facilities, children should be given first consideration in treatment services. The treatment program should consist of an annual examination of all children in the schools or by private practitioners, and restorative, corrective and prophylactic services for underprivileged children. Dental treatment should also be made available to underprivileged adults.

10. The first phase of the community dental health program, dental health education, should be financed by public funds as well as by material and money from the American Dental Association.

11. Any dental program financed or administered wholly or partially by the Ohio State Department of Health or by a local health department should be approved by the council on dental health of the local dental society. Programs sponsored by other groups should be administered by the sponsoring agency and guided by the council on dental health of the local dental society. A coordinating advisory committee composed of representatives of lay groups should be established.

12. Persons eligible for dental service at the expense of the community should be selected by applying a formula based on annual income and on the cost of living in the particular community. The criterion for establishing eligibility for service should be approved by the local dental society.

13. Dental care should be rendered by dentists in clinics, private offices and in trailer or mobile units for rural districts where satisfactory quarters are not available.

14. To facilitate the establishment of a dental health program, an active council on dental health should be formed in each component society; the state department of health should take immediate steps to develop the program recommended in this report; a dental health program should be conducted by each society; the parent-teacher association and other groups should be asked to assist in the program; steps should be taken to develop appealing, attractive and entertaining education material for radio, lectures and plays; a publicity director should be employed to guide the program; the Ohio State Dental Society should take steps to secure the support of component dental societies for S. 176 and S. 178; the Division of Dental Hygiene of the Ohio State Department of Health should develop a comprehensive pamphlet on personal dental hygiene, diet and early dental care, and all dental literature and educational material should be evaluated.

15. The school system should be responsible for educating children in dental health. A systematic teacher-training program should be included in all teacher training institutions.

16. A large share of the responsibility in promoting health rests with state and local governments. It is the responsibility of the dental profession to secure the support of these agencies in organizing and maintaining adequate community dental health programs.

17. The dental professions, boards of education and the city, county and state governments should interest lay groups in promoting dental health activities.

18. The dentist should institute oral health instruction, make use of topical applications of sodium fluoride according to accepted standards, prescribe definite dietary procedures, render periodic prophylactic treatment and perform all necessary restorative work; the research worker should continue and expand studies in the use of fluorides, penicillin and vitamin K, and study the possibility of using dibasic ammonium phosphate in mouthwashes and tooth pastes, and the public health authorities should continue existing studies on mass application of fluorine in community water supplies and study the possibilities of using dibasic ammonium phosphate in mouthwashes and tooth pastes as a public health measure.

19. Graded dental health educational material should be prepared and made available to each county; dental health information should be disseminated through parent-teacher associations, civic organizations, health services, youth clubs and church groups, and slogans should be developed to counteract misleading advertising.

20. The use of ancillary aids, the use of more than one chair, better utilization of office time and the establishment of dental care programs in areas of need are recommended.

LATEST DENTAL SOCIETY ACTIVITIES AND MEETINGS

Connecticut.—The Connecticut Dental Commission will meet in Hartford, June 17-21, for examination of applicants for license to practice dentistry and dental hygiene, according to Clarence G. Brooks, recorder.

Applications should reach the recorder ten days before the meeting. For application blanks, write Dr. Brooks, 302 State St., New London.

Georgia.—The Georgia Dental Association has announced that it will sponsor a workshop in dental health planning June 16-18 in Atlanta. The workshop will be held in cooperation with the Georgia State Department of Health and will follow the general pattern established at workshops held previously in Ohio, New York, New Jersey and Louisiana.

The program for the workshop will be announced in an early issue of THE JOURNAL.

Minnesota.—New officers elected at the recent meeting of the Minnesota State Dental Association were S. R. Steadman, St. Paul, president; C. V. E. Cassel, Duluth, president-elect; Val A. Franta, Mahnomen, vice-president; L. M. Cruttenden, St. Paul, secretary, and C. D. East, Duluth, treasurer.

Total attendance at the meeting was 3,486. The attendance was composed of 1,641 members of the Minnesota State Dental Association, 462 out of state dentists, 194 dental students, 49 dental hygienists, 237 dental assistants, 388 dentists' wives, 366 exhibitors, 92 laboratory technicians, 18 public health personnel and 39 others.

Mississippi.—The annual meeting of the Mississippi Dental Association will be held June 1-4 in Biloxi, according to an announcement by C. B. Alford, Columbia, president.

The principal speakers on the agenda will include Olin Kirkland, Montgomery, Ala., on "Conservative Operation in the Treatment of Periodontal Diseases"; Reeves F. Wells, Panama City, Fla., on "Full Denture Impressions Which Result in Stable Dentures"; Claude C. Cannon, Fayette, Ala., on "Amalgam," and Mims Gage, Tulane University, New Orleans, on "Oral Carcinoma."

The Mississippi State Board of Dental Examiners will meet June 17-19 in Jackson, according to W. R. Madden, Forest.

Missouri.—The *Journal of the Missouri*

State Dental Association has appeared in a new double-column format with a new style in cover design, body type and headlines. The style changes were inaugurated to increase readability.

Nevada.—The annual meeting of the Nevada State Dental Association will be held May 12-13 in Las Vegas, according to L. G. Jacob, Reno, secretary.

Speakers conducting clinics will include J. Eugene Zeigler, Los Angeles, on "Interpretation of Roentgenograms"; Carl H. Rice, Detroit, on "Oral Surgery"; Wilford H. Burwell, Los Angeles, on "Acrylics," and Victor H. Sears, Salt Lake City, on "Prosthetics."

New Jersey.—The New Jersey State Dental Society, in a recent ballot, voted in favor of state licensure of dental hygienists. On the first ballot 1,028 voted in favor of license and 677 against, while on the second ballot 1,011 voted in favor of full licensure and 662 in favor of limited licensure.

The board of trustees of the society has passed a resolution requesting the state legislative committee to prepare a law for submission to the legislature.

The New Jersey State Board of Dental Examiners will meet June 9-13, according to an announcement by W. A. Wilson, Trenton, secretary.

Pennsylvania.—The Dental Council and Examining Board of the Commonwealth of Pennsylvania will conduct examinations in Philadelphia and Pittsburgh on June 23-28, according to an announcement by Reuben E. V. Miller, secretary.

Written dental examinations will be held June 23-25, and written hygienists' examinations June 24-25. Clinical dental tests will be held June 26-28 and clinical hygienists' tests June 26.

Vermont.—The seventy-first annual meeting of the Vermont State Dental Society will be held May 25-27 in Woodstock, according to an announcement by Byron W. Bailey, president.

The principal speakers for the meeting will be John Jacob Posner, New York, on "Minor Oral Surgery and Local Anesthesia"; Henry M. Goldman, Boston, on "The Diagnosis and Treatment of the Periodontal Pocket"; LeRoy M. S. Miner, Boston, on "Penicillin in the Treatment of Dental Infections"; George E. Hall, Boston, and Alex I. Keltie, Boston, on "Porcelain Cements by the Davis Process"; H. A. Zander, Boston, on "Dentistry for Children"; J. Edward Marceau, Burlington, Vt., on "Orthodontics," and J. Murray Gavel, Boston, on "Helpful Hints and Practical Short Cuts to Better Dentistry."

The Vermont State Board of Dental Examiners will meet June 23-25 in Montpelier, according to C. I. Taggart, secretary.

Washington.—The annual meeting of the Washington State Dental Association will be held May 5-7 in Spokane, according to C. W. Olsen, Spokane, secretary.

Speakers will include Donald A. Kerr, University of Michigan, on "Periodontal Diseases and Treatment"; L. R. Main, St. Louis University, on "Roentgenology, an Aid in Dental Practice," and George A. Selleck, College of Physicians and Surgeons, on "The Present Status of Partial Dentures."

The Cowlitz County Dental Society, a component of the Washington State Dental Association, has changed its name to the Lower Columbia Dental Society after approval by the executive committee of the state association.

PUBLIC HEALTH

NEW ENGLAND INSTITUTE OF HEALTH TO BE HELD JUNE 16-18

The New England Health Institute, first to be held since the war, will take place June 16-18 at the University of New Hampshire, Durham. A program of health and educational sections is being planned, according to H. Shirley Dwyer, public relations chairman.

REMEDIAL DENTAL DEFECTS LEAD IN CHILDREN'S SURVEY

Almost 40 per cent of the children in the city of New York examined by the Children's Aid Society were found to be suffering from remedial defects, according to an announcement by the department of health and education of the society.

The examining survey covered six clinics and included 6,064 children, of which 2,279 had defects. Dental defects and malnutrition led all other deficiencies, the society reported. Dental defects accounted for 34 per cent of the total number of deficiencies.

DENTAL EDUCATION

CALIFORNIA OFFERS SEVEN SUMMER CONTINUATION COURSES

The program for seven courses to be offered at the College of Dentistry, University of California, during summer session II from August 4 to September 13, has been announced by Gordon M. Fitzgerald, director of continuation studies.

Enrollment for the courses will close July 5. All the courses are offered on a part time basis so that several can be taken at the same time. Further information may be obtained from Dr. Fitzgerald, College of Dentistry, University of California, San Francisco 22.

The courses offered are: prosthodontia, seventy-two hours in full and partial denture construction; orofacial prosthesis, fifty-four hour introductory course; amalgam technic, forty-two hour refresher course using the Sweeney method of amalgam manipulation; crown and bridge prosthodontia, one hundred twenty hour refresher course in technical construction; nutrition and its relation to dental problems, twenty-four hour refresher course, and two twenty hour refresher courses in dental roentgenology.

Walter H. Wright Honored

Walter H. Wright, dean, College of Dentistry, New York University, was honored recently at a dinner given by the Pittsburgh Dental Alumni Association of Greater New York. H. B. Warshavsky, Brooklyn, president of the association, right, is shown presenting Dr. Wright with a bronze plaque making him honorary president of the association

R. G. ELLIS IS NAMED DENTAL DEAN AT TORONTO UNIVERSITY

The appointment of Roy G. Ellis, director of the faculty clinic, Faculty of Dentistry, University of Toronto, as dean of the Faculty of Dentistry, effective July 1, has been announced by the University of Toronto.

Dr. Ellis, a member of the Faculty of Dentistry at the University of Toronto since 1931, practiced in Adelaide, South Australia, and did postgraduate work at Guy's Hospital, London, before coming to Canada.

PENNSYLVANIA DENTAL ALUMNI SOCIETY TO MEET MAY 23

The annual meeting of the Dental Alumni Society of the University of Pennsylvania will be held May 23 at the Evans Institute, University of Pennsylvania, according to an announcement by M. W. Carr, president of the society.

The program will include the presentation of the William Dwight Tracy Memorial Clinic to the University of Pennsylvania. Inquiries and requests for reservations should be addressed to Z. T. Jackaway, secretary and treasurer, 1506 East Susquehanna Ave., Philadelphia 25.

TUFTS DENTAL, MEDICAL SCHOOLS TO BE MOVED TO NEW BUILDING

The dental and medical schools of Tufts College will be moved shortly to an eight-story building in the New England Medical Center, according to an announcement by Leonard Carmichael, president of Tufts College.

The moving of the two schools will be the first step in a planned development of the college, Dr. Carmichael said. The cost of modernizing the new dental and medical school building has been estimated at $500,000.

HUMANE SOCIETY TO AID IN EDUCATION FOR ANIMAL RESEARCH

Charles Doan, dean, Ohio State University, has announced that the Humane Society of Columbus, Ohio, will cooperate with Ohio State University by assisting the university to build understanding of the necessity of animal studies.

The announcement was made at a recent meeting at which representatives of Western Reserve University, Ohio State University and the University of Cincinnati laid plans for a public educational program on animal research.

DENTISTRY ABROAD

CZECH STOMATOLOGICAL SOCIETY TO MEET JUNE 11-15 IN PRAGUE

The Czechoslovak Stomatological Society will hold a congress in Prague June 11-15 in celebration of the fiftieth anniversary of the founding of the society.

The tenth annual congress of the A.R.P.A. International (Society for the Investigation of Periodontal Diseases) will be held June 11-13 in Prague. All organizations and members of organizations in related fields are invited to the meeting, according to an announcement by the society.

The official language of the congress will be Czech and Slovak, but some lectures will be given in English and French.

NEW OFFICERS ANNOUNCED BY SAO PAULO DENTAL SOCIETY

The new officers elected by the Association of Dental Surgeons of Sao Paulo, Brazil, have been announced by Alberto Cardoso, secretary general.

The officers, besides Dr. Cardoso, are Francisco Degni, president; Lahyr Assumpcao, vice-president; Nelson Leonis, first secretary; José de Almeida Carvalho, second secretary; Ruy Simoes Silva, first treasurer, and Raglames Puglisi, second secretary.

Members of the financial board are Angelo Vella, Hercules Montagna and Celso Lima Pereira. Members of the syndicate council are Domingos Parisi, Domingos Puglisi and Joao Jorge de Barros.

LEGISLATION

NEW PUBLIC HEALTH, MEDICAL BILLS INTRODUCED IN CONGRESS

Four bills dealing with public health, medicine and science have been introduced recently into the Senate.

A bill to make the Federal Security Agency into a Department of Health, Education and Security was introduced by Senator George D. Aiken, Vermont. Under the bill, S. 712, the department would be administered by a secretary, an undersecretary and two assistant secretaries appointed by the president. No

qualifications for the posts are stipulated.

Senator Henry C. Lodge, Massachusetts, has introduced S. 678, a medical aid act which would offer federal assistance to the states in order to furnish medical aid to needy persons. Senator H. Alexander Smith, New Jersey, introduced S. 526, a bill to create a National Science Foundation, for himself and Senators Guy Cordon, Oregon; Chapman Revercomb, West Virginia; Leverett Saltonstall, Massachusetts; Warren G. Magnuson, Washington, and J. William Fulbright, Arkansas.

The Foundation would be composed of forty-eight members to be appointed by the president. Within the Foundation there would be a division of national defense, a division of medical research, a division of mathematical, physical and engineering sciences, a division of biological sciences and a division of scientific personnel and education.

Senator Wayne Morse, Oregon, introduced S. J. Res. 66, to authorize the Secretary of Labor, in cooperation with federal, state and local agencies, to make studies of the health and physical status of children of school ages, to study the facilities and services offered by the schools for the correction of physical defects and to recommend and demonstrate means of conducting school health examinations and providing school health services.

FEDERAL AGENCIES

TWENTY-TWO DEVICES OF INTEREST TO DENTISTS PATENTED IN PERIOD FROM NOVEMBER 1 TO FEBRUARY 28

A total of twenty-two devices of interest to the dental profession were patented in the four month period, November through February. The list of patents issued by the U. S. Patent Office during that time follows.

		November 5
2,410,439	Claude Etienne Garnier	Dental Handpiece Chuck
2,410,453	Earl S. Mills	Denture Packing
		November 12
2,410,991	Enrique Müller	Hypodermic Injection Applying Device
2,411,001	William C. Rothkranz	Dental Precision Bridge Device
2,411,079	Gerhard H. J. Baule	Method of Attaching Sutures to Shanks of Surgeons Needles
		November 19
2,411,194	Raphael A. DeRome	Dentist's Bite Detector
		November 26
2,411,610	Emanuel Aaron	Toothbrush
2,411,758	Joseph Ruetz	Tooth Root Pivot
		December 10
2,412,207	Joseph Glen Day	Production of Artificial Tooth Structures
2,412,352	Simon Myerson	Temporary Support for Artificial Teeth
		December 17
D-146,082	Adolph Hunau	Design for a Dental Apparatus Handpiece or the Like

		December 31
2,413,303	Marvin L. Folkman	Syringe
2,413,333	Simon Myerson	Crown Type Tooth
2,413,619	Willis H. Grinnell	Machine for Grinding Orthodontic Models
		January 7
2,413,858	Denis Borgeat	Hypodermic Needle Holder
		January 14
2,414,093	Donald F. Cole	Mold Coating Composition and Method of Protecting Plastics During Molding
		January 21
2,414,746	John D. Karle	Suture Protecting and Tensioning Means for Surgical Stitching Instruments
2,414,775	Robert Stavely	Toothbrush
D-146,271	Robert Stavely	Design for a Toothbrush
		February 4
2,415,203	Hyman Freedman	Dental Engine Attachment
		February 11
2,415,447	Samuel John Stanton	Dental Care Outfit
		February 25
2,416,506	Joe R. Vest	Vacuum Apparatus for Investing Patterns

ARMY AND NAVY

DENTAL GRADUATION CEREMONIES HELD AT NAVAL MEDICAL CENTER

Seventeen officers of the U. S. Navy Dental Corps, a dental officer of the Peruvian Air Force and a dental officer of the Argentine Navy have been awarded certificates upon the completion of a six month advanced dental postgraduate course at the National Naval Medical Center, Bethesda, Md.

Among the speakers at the graduation ceremonies was Oscar Ivanissevich, Ambassador from Argentina and professor at the University of Buenos Aires. Dr. Ivanissevich discussed the increasing scope of dentistry aimed toward general betterment of health and early diagnosis of oral diseases.

He pointed out some of the fundamental problems which face every dentist at present and suggested a study program to combat the first problem, which he called the uncertain "etiology of dental cavities." The program would include "study of the teeth of a thousand school boys and girls of all the capitals of America; study of the teeth of a thousand young men of draft age in military camps all over America, and study of the teeth of a thousand young men and women in colleges and universities.

"Pyorrhea is also another unsolved problem," Dr. Ivanissevich said. "Here again the joint work of the bacteriologist, the chemist and the pathologist is indispensable."

He stressed the necessity for collaboration between dentists and physicians to fight cancer. "Whenever a dental doctor examines the mouth, he should do so with the thought of collaborating to fight cancer," Dr. Ivanissevich said.

Other speakers were Rear Admiral Clifford A. Swanson, Surgeon General of the Navy, and Rear Admiral Alex-

ander G. Lyle, Assistant Chief for Dentistry, Bureau of Medicine and Surgery. The speakers were introduced by Capt. Clemens V. Rault, commanding officer of the Naval Dental School.

Additional guests at the graduation exercise included Rear Admiral Carlos Saravia, naval attaché of the Argentine Embassy; Col. Guillermo Suero, air attaché of the Peruvian Embassy; Cmdr. Guillermo Triado, naval attaché of the Peruvian Embassy; John P. Burke, dean, School of Dentistry, Georgetown University, and Daniel F. Lynch, chairman of the Committee on International Relations, American Dental Association.

ARMY DENTAL OFFICERS VISIT CIVILIAN RESEARCH CENTERS

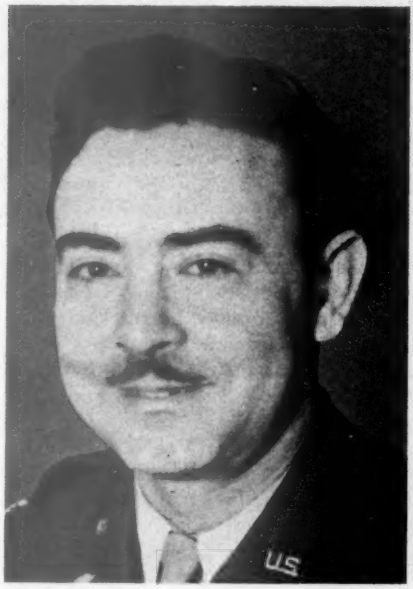
Two Army Dental Corps officers were recently sent on a visit to midwestern dental schools and research departments as the first step in a program to establish liaison between Army dental research and civilian research centers.

The officers, Maj. E. J. Fedor and Capt. George W. Burnett, both on duty in the Research and Development Division, Office of the Surgeon General of the Army, visited the dental schools at the University of Illinois, Northwestern University and the University of Michigan and also visited the University of Chicago.

RULING ON INACTIVE STATUS ALTERED FOR NAVY DENTAL CORPS

The requirement that reserve officers of the U. S. Navy Dental and Medical Corps must apply for appointment to the regular navy within six months of release to inactive duty has been canceled by a ruling from the office of the Secretary of the Navy.

Officers eligible to transfer on other counts will be permitted to enter an application after the expiration of six months on an inactive duty status.



New Dental Surgeon

Maj. Ferdinand W. Di Noia, Staten Island, N. Y., has been assigned as staff dental surgeon at Headquarters, Fifth Air Force, Nagoya, Japan. He is currently visiting all the dental clinics of the Fifth Air Force bases throughout Japan and Korea

GENERAL NEWS

DENTAL COMPANY CLARIFIES CONFUSION OF FIRM NAMES

L. B. Vernon, president of the Vernon-Benshoff Company, Pittsburgh, manufacturers of dental supplies, has announced that his company is in no way connected with the Vernon Gold and Refining Company of Pittsburgh.

J. A. Bauchert, El Paso, Texas, reported to the American Dental Association, in a story published in the March 15 issue of THE JOURNAL, that the Vernon Gold and Refining Company solicited mail sales of gold dental scrap and paid for the gold without a listing of gold weight received.

MASSACHUSETTS DENTAL SOCIETY PRODUCES RED CROSS BROADCAST

The Massachusetts Dental Society, for the third year, took care of writing, organizing and producing a half hour broadcast on radio station WEEI, Boston, in support of the 1947 Red Cross fund campaign.

Participants in the broadcast were Charles C. Lund, president, Suffolk Medical District Society; Vlado A. Getting, commissioner of public health, Commonwealth of Massachusetts; the Rev. Donald A. McGowan, director of hospitals for the archdiocese of Boston and vice-president of the New England Hospital Assembly; Harold H. Hookway, president, Massachusetts Dental Society; Frank B. Carroll, assistant medical director, New England region, Veterans Administration; Edward O'Connor, director of publicity for the Red Cross, and Harrison G. Robinson, general chairman of the Greater Boston Red Cross fund campaign.

A.M.A. CENTENNIAL MEETING WILL BE HELD JUNE 9-13

The centennial celebration of the American Medical Association will be held in Atlantic City June 9-13, commemorating the anniversary of the founding of the organization in Philadelphia on May 5, 1847.

The centennial meeting will include extensive exhibits on the progress made in medical science during the past century.

HEALTH DIRECTOR WARNS OF GLYCOL, ULTRAVIOLET DANGERS

R. E. Dyer, director of the National Institute of Health, U. S. Public Health Service, Federal Security Agency, has issued a statement warning that the use of glycol vapors and ultraviolet radiation in the control of air-borne infections is still in the experimental stage and is not satisfactory for public installation.

Dr. Dyer said that committees of the National Research Council and the American Public Health Association have studied available data on the installation of such equipment and have reported that the use of either glycol or ultraviolet radiation is still experimental and that ultraviolet rays of sufficient intensity to kill micro-organisms in the air are also harmful to the human eyes and exposed skin.

MEDICAL LIBRARY ASSOCIATION TO HOLD MEETING MAY 27-29

The Medical Library Association will hold its forty-sixth annual meeting in Cleveland, May 27-29, at the invitation of the Cleveland Medical Library Association.

The scientific sessions at the meeting will include papers on various subjects related to dental and medical libraries. The speakers will include Mr. Tom Jones, professor of medical and dental illustrations, University of Illinois; Bruno Gebhard, director, Cleveland Health Museum, and Mr. Seymour Robb, librarian, College of Physicians and Surgeons, Columbia University.

For further information, write the secretary, Miss Heath Babcock, New York State Medical Library, Albany 1, N. Y.

ACADEMY OF MEDICINE PLANS ENLARGED PROGRAM IN NEW YORK

Plans to make New York City the medical capital of the world were outlined recently at the centennial celebration of the New York Academy of Medicine.

George Baehr, president of the academy, announced at the meeting that in the future "the academy proposes to weld together the resources of the sixty-five major hospitals of this great city so as to

make it the center of medical education for the physicians of the nation and of the world."

Other new plans for the academy include the enlargement of library facilities, the addition of a building extension to provide exhibit halls and the appointment of a committee on medicine and the changing social order.

RESEARCH ASSOCIATE WORKS ON BUREAU OF STANDARDS PROJECT

Harold J. Caul, one of the research associates at the National Bureau of Standards for the Research Commission of the American Dental Association, was one of the authors of an article on the *Development of a Hydrochloric Acid Process for the Production of Alumina from Clay* which was published recently by the National Bureau of Standards.

Mr. Caul was loaned to the Bureau by the Research Commission for this work during the latter part of the war.

DENTAL SOCIETIES, OTHER GROUPS HONOR DENTISTS

Five dentists have been honored recently by dental societies and by other organizations, and dentists who served in World War II have been cited at a testimonial meeting.

A. W. Robertson, president of the Minnesota State Dental Association, was awarded the Minneapolis Star and Tribune Award for leadership in the state of Minnesota. The award was a watch pendant and a certificate in recognition of Dr. Robertson's contribution in the building up of his state.

Edward R. White, president of the New Jersey Dental Society, was guest of honor at a testimonial dinner held by members of his state society, and W. J. Charters, Des Moines, Iowa, was honored at a dinner given by the G. V. Black Study Club of Des Moines.

Thomas Spence, Crookston, Minn., was guest of honor at a dinner given by other dentists in the area to celebrate Dr. Spence's seventy-fifth birthday and the completion of fifty years of practice in Crookston. A testimonial dinner for Robert Adams, Philadelphia, was held recently by the North Philadelphia Association of Dental Surgeons.

The Philadelphia County Dental Society held a meeting to pay homage to those of its members who served in World War II. All veterans who are members of the society attended, and each was presented with an inscribed certificate in recognition of his war record.

EXHIBIT ON MOUTH CANCER LOANED FOR MEDICAL MEETING

The North Carolina Division of the American Cancer Society has returned to the Bureau of Public Relations of the American Dental Association an exhibit on "Cancer of the Mouth" which was loaned to the society for the forty-eighth annual meeting of the Tri-State Medical Association of the Carolinas and Virginia.

The dental exhibit includes full color Kodachrome pictures of cancer of the mouth.

ANTI-ARTHRITIS ASSOCIATION INCORPORATED IN CALIFORNIA

The American Anti-Arthritis Association, with headquarters located in Los Angeles, recently was incorporated by the state of California.

The organization was established to enable persons interested in the study and prevention of arthritis to unite in a program of education for the control of the disease and to promote and aid in research in arthritis and related fields.

Bernard L. Wyatt, Los Angeles, is president of the association. John V. Barrow, Los Angeles, is vice-president, and Robert T. Pottenger, Pasadena, is secretary-treasurer.

STAZE DENTURE ADHERENT PASTE NOT ACCEPTABLE TO COUNCIL ON DENTAL THERAPEUTICS

DURING the past year, several pastes which may be used to hold dentures more firmly in the mouth have been placed on the market. The most widely advertised of these is Staze.

On January 10, 1946, a routine inquiry was directed by the Council on Dental Therapeutics to the distributors of this product. The firm replied in part as follows:

> Inasmuch as our product's patent has not yet been granted—is still "Patent Pending" —we regret that we cannot divulge its composition of formula. However, we can state its base is Karaya Gum, and that all its ingredients are pure and harmless. (1-12-46)

In a letter dated January 31, 1947, the firm wrote:

> . . . our product is principally the finest grade of Karaya Gum (100 mesh, or finer) (55 per cent) and a mixture of five different oils. We use a small amount of peppermint oil U.S.P. and the following:
>
> Erythrosin (FD&C Red #3)
> Red Star Oxide Harshaw
> FD&C Red #32
>
> In addition we use a small amount of ingredient which acts as a binder; and another one which provides for easier extrusion (slippage).
>
> We are in complete sympathy with your desire to protect the dental profession. And hereby agree that we will not make any change in our formula without first communicating with you.

Preliminary examination of a sample of Staze in the Bureau of Chemistry of the American Dental Association revealed essentially a mixture of petrolatum and karaya gum. In passing, the reader may wish to know that most commercial denture adhesive powders consist principally of karaya gum. Powdered karaya gum or gum tragacanth alone may be used satisfactorily as a denture adhesive.

Staze has been advertised in the newspapers in space varying from a few square inches to a full page and in the most glowing terms. For example, "Don't let these annoying loose-plate troubles make your life miserable another day! Instead, try dentist's amazing discovery called Staze. Guaranteed to hold uppers and lowers comfortably secure all day. . . ." "Staze not only helps prevent chaffing by holding your plates securely in place, but also quickly relieves soreness by forming a s-o-o-t-h-i-n-g 'comfort cushion' under plates." ". . . you'll be completely thrilled with the way Staze will make your dental plates feel and fit. . . ." ". . . how wonderful to be able to say goodbye to sore, irritated gums and mouth. . . ." "The remarkable cream paste denture adhesive that has already helped over a million grateful men and women find pleasant and quick relief from the pain and misery of sore gums due to *ill-fitting dental plates*. . . ."

Some of the recent advertising for Staze advises the patient to visit his dentist regularly for a checkup. This advice is not the most prominently or extensively featured part of the advertising.

It is common knowledge that ill fitting artificial dentures may cause serious damage to the oral structures with which they come in contact. Denture adhesives should not be used to enable the wearer to prolong the use of such dentures, since the harm the dentures produce may thus be intensified. The only sound advice which can be given to the wearer of ill fitting artificial dentures is to go to his dentist and get the condition corrected at the earliest possible time. Advertising which results in the long continued use of ill fitting dental appliances is a menace to the health of the public.

Staze is unacceptable (1) because some of the advertising for the product tends to encourage its users to prolong the wearing of ill fitting artificial dentures and (2) because of its partially secret composition.

COMMITTEE ON LEGISLATION

NATIONAL HEALTH ACT OF 1947 (S. 545)

AN ANALYSIS of the National Health Act of 1947 (S. 545) prepared by the Committee on Legislation was published in the April 1 issue of THE JOURNAL. Although this analysis presents the more important aspects of the bill, especially those that pertain to dentistry, the entire bill is published in this issue as many dentists will wish to study all of its provisions.

In the Senate of the United States, February 10, 1947, Mr. Taft (for himself, Mr. Smith, Mr. Ball, and Mr. Donnell) introduced the following bill; which was read twice and referred to the Committee on Labor and Public Welfare:

A bill to coordinate the health functions of the Federal Government in a single agency; to amend the Public Health Service Act for the following purposes: To expand the activities of the Public Health Service; to promote and encourage medical and dental research in the National Institute of Health and through grants-in-aid to the States; to construct in the National Institute of Health a dental research institute; and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Health Act of 1947."

SEC. 2. The Congress hereby finds and declares—

(a) That health and medical functions are widely scattered through many agencies in the Federal Government with resultant confusion and duplication of effort, and that because of this diffuse organization State health administrators and other State officials find it necessary to submit plans and budgets to numerous Federal officials responsible for health programs authorized under a large number of unrelated statutes;

(b) That there are inadequacies in the distribution of public health services and of medical and dental services in the United States, with the result that some persons are unable to secure adequate health and medical services;

(c) That it is the policy of the United States to aid the States, through consultative services and grants-in-aid, to make available medical, hospital, dental, and public-health services to every individual regardless of race or economic status; and

(d) That it is the further policy of the United States to make provision for voluntary

deductions from the salary of Federal employees of premiums directed by them to be paid to voluntary nonprofit health-insurance funds.

SEC. 3. When used in this Act the terms defined in section 2 of the Public Health Service Act, as amended, shall have the same meaning as in that Act, as amended.

Title I — National Health Agency

SEC. 101. (a) There is hereby created in the executive branch of the Government an independent agency to be known as the National Health Agency, which shall be administered by a National Health Administrator, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall receive compensation at the rate of $15,000 per annum.

(b) The Administrator shall cause an official seal to be made for the Agency of such device as the President shall approve, and judicial notice shall be taken thereof.

(c) The Administrator, who shall engage in no other business, vocation, or employment, shall be a citizen of the United States and a doctor of medicine licensed to practice in one or more of the States and who is outstanding in the field of medicine.

SEC. 102. (a) It shall be the purpose of the Agency to promote the general welfare of the people of the United States by aiding and fostering progress throughout the Nation in the field of health and medicine and by centralizing in the Agency the activities of the Federal Government relating to health.

(b) To carry out the purposes of subsection (a) the Agency shall—

(1) encourage the development throughout the Nation of health services and facilities;

(2) advise and cooperate with other agencies and departments of the Federal Government, and with State governments and agencies, and with private agencies functioning in the field of health;

(3) collect and analyze statistics and make studies, investigations, and reports on conditions, problems, and needs in the field of health in the United States and in other countries, and disseminate and make available information in this field;

(4) make reports and recommendations with respect to the most efficient policies and methods for the promotion of health and related services; and

(5) carry out such specific duties as may be entrusted to it by this and subsequent enactment of Congress, and exercise general supervision over the agencies transferred to it pursuant to section 103.

(c) The Agency shall have responsibility for Federal governmental activities concerned with—

(1) the administration of funds appropriated as grants to States for medical and hospital care, dental care, hospital facilities, and all other health activities;

(2) the prevention of disease through water purification, sewage treatment, and the elimination of lake and stream pollution, and promotion of research toward this end;

(3) the promotion of maternal, prenatal, and child care, and the study and dissemination of information on child growth, development, and nutrition;

(4) the protection of the national health by promoting purity, standard potency, and truthful and informative labeling of foods, drugs, and cosmetics;

(5) the training and rehabilitation of persons vocationally handicapped because of permanent disability with the objective of placing such persons in remunerative employment; and

(6) the administration of the Hospital Survey and Construction Act of August 13, 1946; and

(7) such related matters as shall aid the States and the people of the United States in the maintenance of adequate and efficient health facilities and otherwise promote the national health.

(d) Nothing in this section shall be deemed to grant to the Agency or to any constituent unit thereof any powers, functions, or duties other than those transferred pursuant to subsections 103 (a) and (b).

(e) Nothing in this title shall be deemed to transfer to the Agency any powers, functions, or duties exercised by the Army, the Navy, or the Veterans' Administration.

SEC. 103. (a) Upon the effective date of this title, as provided in section 108, there are hereby transferred to the Agency the following agencies, and their functions, powers, and duties: The Public Health Service, Saint Elizabeths Hospital, and the Food and Drug Administration.

(b) Upon the effective date of this title, as provided in section 108, there are hereby transferred to the Agency the functions and duties of the Children's Bureau in the Social Security Administration concerned with the administration of title V, parts 1 and 2, of the Social Security Act, as amended, and the functions and duties of the Division of Health Studies in the Bureau of Research and Statistics of the Social Security Administration.

(c) Upon the transfers provided for in subsections (a) and (b) all laws relating to any agency or function transferred shall, insofar as such laws are not inapplicable, remain in full force and effect. Any transfer of personnel pursuant to this title shall be without change in classification or compensation, except that this requirement shall not operate to prevent the adjustment of classification or compensation to conform to the duties which may be assigned to such transferred personnel. All orders, rules, regulations, permits, or other privileges made, issued, or granted by any agency, or in connection with the functions, so transferred, and in effect at the time of the transfer, shall continue in effect to the same extent as if such transfer had not occurred, until modified, superseded, or repealed. No suit, action, or other proceeding lawfully commenced by or against any agency or any officer of the United States acting in his official capacity shall abate by reason of any transfer made pursuant to this title, but the court, on motion or supplemental petition filed at any time within twelve months after such transfer takes effect, showing necessity for a survival of such suit, action, or other proceeding to obtain a settlement of the questions involved, may allow the same to be maintained by or against the appropriate agency or officer of the United States.

(d) All personnel and property (including office equipment and records) of the agencies which are transferred under subsection (a) shall be transferred to the Agency.

(e) The personnel primarily concerned with, and the property (including office equipment and records) used in connection with the functions transferred to the Agency under subsection (b) shall be transferred to the Agency.

(f) So much of the unexpended balances of the appropriations, allocations, or other funds available or to be made available for the use of the agencies and of officers and employees of the agencies transferred, and of agencies and officers and employees of agencies some or all of whose functions are transferred under this section, as the Director of the Bureau of the Budget with the approval of the President shall determine, shall be transferred to the Agency, but only for the use of such agency or function herein transferred to the Agency for whose use such appropriation, allocation, or other fund was originally provided. In determining the amount to be transferred, the Director of the Bureau of the Budget may include an amount to provide for the liquidation of obligations incurred against such appropriations or other funds prior to the transfer.

(g) The Director of the Bureau of the Budget is hereby authorized and directed to make a study of the activities of the several departments and agencies of the Federal Government with a view to determining whether any activities of such departments and agencies relating to health, but not transferred to the Agency in this title, should, in the interests of economy and simplicity of administration, be transferred to the Agency; and to complete such study and report the results thereof to the Congress by December 31, 1947.

SEC. 104. (a) The Agency shall be composed of the following constituent units: (1) The Office of the Administrator; (2) the Public Health Service, which in turn shall assume the administration of Saint Elizabeths Hospital and Freedmen's Hospital; (3) the Office of Medical and Hospital Care Services; (4) the Office of Dental Care Services; (5) the Office of Maternal and Child Health; (6) the Office of Health Statistics; (7) the Food and Drug Administration; and (8) such other constituent units as the Administrator finds necessary.

(b) The organization of the Food and Drug Administration shall remain unchanged except as it may conflict with specific provisions of this title. The Surgeon General of the Public Health Service shall be appointed as provided in section 204 of the Public Health Service Act. The heads of the other constituent units of the Agency set forth herein shall be appointed by the Administrator.

(c) The Director of the Office of Medical and Hospital Care Services shall be a doctor of medicine licensed to practice medicine in one or more States, who has had at least five years of active medical practice and who is outstanding in the field of medicine. The Director of the Office of Dental Care Services

shall be a doctor of dental surgery who has had at least ten years of active practice and who is outstanding in the field of dentistry.

(d) Within the Office of Maternal and Child Health there shall be an Advisory Council on Maternal and Child Care to be appointed by the Administrator, which shall advise and consult with the head of the Office of Maternal and Child Health in the formulation and administration of the medical and technical activities of said Office. Such council shall be composed of eight members, at least three of whom shall be doctors of medicine who are specialists in obstetrics or pediatrics. Each member shall hold office for a term of four years, except that any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term, and except that the first terms of the original members shall expire, as designated by the Surgeon General at the time of appointment, two at the end of one year, two at the end of two years, two at the end of three years, and two at the end of four years after the date of appointment. At the time of appointment the Administrator shall designate one member to be chairman of the council.

Each member of the Advisory Council on Maternal and Child Care, while attending meetings of such council or while otherwise serving pursuant to this section, shall be entitled to receive compensation at a rate to be fixed by the Administrator, but not to exceed $25 per diem, and shall also be entitled to receive an allowance for actual and necessary traveling and subsistence expenses while so serving away from his place of residence.

SEC. 105. The Administrator is authorized to make such expenditures (including expenditures for personal services and rent at the seat of government and elsewhere, for lawbooks, books of reference and periodicals, and for printing and binding) as may be necessary to carry out the provisions of this title, and as may be provided for by the Congress from time to time.

SEC. 106. The Administrator shall make at the close of each fiscal year a report in writing to Congress and the President giving an account of all moneys received and disbursed by him and the Agency, describing the work done by the Agency, and making such recommendations as he shall deem necessary for the effective performance of the duties and purposes of the Agency.

SEC. 107. There is authorized to be appropriated for the administrative expenses of the Agency, including such expenses as are described in section 105, for the fiscal year ending June 30, 1948, and each year thereafter, the sum necessary for such purposes.

SEC. 108. The Administrator shall make a study of the organization and staffing of the Agency and, within six months after the effective date of this title, shall report to the Congress his findings and recommendations for promoting the more efficient and effective operation of the Agency. Such study shall cover all aspects of the organization and staffing of the Agency and of its constituent units and shall include (1) salaries, (2) the desirability of retaining or modifying the commissioned corps of the Public Health Service, and (3) the desirability of establishing an Office of Health and Medical Research as a constituent unit of the Agency.

SEC. 109. This title shall take effect July 1, 1947. The Administrator may be appointed by the President, and his appointment confirmed by the Senate, at any time after the enactment of this title, but such appointment shall not become effective until July 1, 1947.

Title II — Amendments to Public Health Service Act

SEC. 201. Section 2 (c) of the Public Health Service Act is amended to read as follows:

"(c) The term 'Administrator' means the National Health Administrator."

SEC. 202. Section 2 of the Public Health Service Act is amended by adding at the end thereof the following new subsection:

"(1) The term 'Agency' means the National Health Agency."

SEC. 203. Section 314 of the Public Health Service Act is amended by adding a new subsection following subsection (b) as follows:

"(c) To enable the Surgeon General to carry out the purposes of section 301 with respect to developing more effective measures for the prevention and control of cancer, and to assist, through grants and as otherwise provided in this section, States, counties, health districts, and other political subdivisions of the States in establishing and maintaining adequate measures for the prevention and control of such disease, including the provision of appropriate facilities for diagnosis and includ-

ing the training of personnel for State and local health work, and to meet the cost of pay, allowances, and traveling expenses of commissioned officers and other personnel of the Service detailed to assist in carrying out the purposes of this section with respect to cancer, and to administer this section with respect to such disease, there is hereby authorized to be appropriated for the fiscal year ending June 30, 1948, and for each fiscal year thereafter, the sum of $10,000,000."

Section 314 of the Public Health Service Act is further amended by renumbering subsections (c) through (j) to read (d) through (k), respectively.

SEC. 204. The Public Health Service Act is hereby amended by adding at the end thereof the following new titles:

"Title VII — General Medical Service for Families and Individuals with Low Income

"Part A — Medical Care Survey

"SEC. 701. In order to assist the States in carrying out the purposes of section 711, there is hereby authorized to be appropriated the sum of $3,000,000, to remain available until expended. The sums appropriated under this section shall be used for making payments to States which have submitted, and had approved by the Director, State applications for funds for carrying out such purposes.

"SEC. 702. (a) To be approved, a State application for funds for carrying out the purposes of section 701 must—

"(1) designate a single State agency as the sole agency for carrying out such purposes: *Provided,* That after a State plan has been approved under section 712 (b), any further survey or programing functions shall be carried out pursuant to section 712 (a) (9), by the agency designated in accordance with section 712 (a) (1);

"(2) provide for the designation of a State advisory council, which shall include representatives of nongovernment organizations or groups, and of State agencies, concerned with the provision of medical or hospital care services, including representatives of the users of such services selected from among persons familiar with the need for such services in urban or rural areas, to consult with the State agency in carrying out such purposes;

"(3) provide for making an inventory and survey in accordance with section 712 (a) (7) containing all information required by the Director, and for developing a program in accordance with section 712 (a) and with regulations prescribed under section 715 (a); and

"(4) provide that the State agency will make such reports, in such form and containing such information as the Director may from time to time reasonably require, and give the Director, upon demand, access to the records on which such reports are based.

"(b) The Director shall approve any application for funds which complies with the provisions of subsection (a).

"SEC. 703. (a) Each State for which a State application under section 702 has been approved shall be entitled to an allotment of such proportion of any appropriation made pursuant to section 701 as its population bears to the population of all the States, and within such allotment it shall be entitled to receive 33 1/3 per centum of its expenditures in carrying out the purposes of section 701 in accordance with its application: *Provided,* That no such allotment to any State shall be less than $10,000. The Director shall from time to time estimate the sum to which each State will be entitled under this section, during such ensuing period as he may determine, and shall thereupon certify to the Secretary of the Treasury the amount so estimated, reduced or increased, as the case may be, by any sum by which the Director finds that his estimate for any prior period was greater or less than the amount to which the State was entitled for such period. The Secretary of the Treasury shall thereupon, prior to audit or settlement by the General Accounting Office, pay to the State, at the time or times fixed by the Director, the amount so certified.

"(b) Any funds paid to a State under this section and not expended for the purposes for which paid shall be repaid to the Treasury of the United States."

"Part B — Medical Care Services

"SEC. 711. In order to assist the States to provide general health, hospital, and medical services for families and individuals with low income in accordance with the provisions of this title, there is hereby authorized to be appropriated for the fiscal year ending June 30, 1948, and for each of the four succeeding

years, the sum of $200,000,000. The sums appropriated pursuant to this section shall be used for making payments to the States which have submitted and had approved by the Director State plans in accordance with the provisions of this title. During and after said five years Congress shall review the program and determine the amount to be authorized thereafter.

"SEC. 712 (a) Any State desiring to take advantage of this title may submit a State plan for carrying out its purposes. Such plan must—

"(1) designate a single State agency as the sole agency for the administration of the plan or designate such agency as the sole agency for supervising the administration of the plan, providing that on or before 1949 such agency shall be the State health agency;

"(2) provide for the designation by the Governor of a State medical and hospital care advisory council, which shall include representatives of nongovernment organizations or groups, and of State agencies concerned with the administration or utilization of health, medical, or hospital services, including representatives of State medical associations, State hospital associations, voluntary nonprofit prepaid medical care plans and voluntary nonprofit prepaid hospital plans, or other groups interested in the improvement of medical and hospital services and in the better distribution thereof;

"(3) contain satisfactory evidence that the State agency designated in accordance with paragraph (1), in cooperation with other public and private agencies, will have authority to carry out such plan in conformity with this title;

"(4) set forth a State-wide program designed and calculated to provide within five years—

"(a) hospital services, surgical services, and medical services for all those families and individuals in the State having insufficient income to pay the whole cost of such; and

"(b) periodic physical examinations for all children in elementary and secondary schools in the State.

"Such program may, at the option of the State, provide medical care services in one or more of the following ways: In institutions, in the home, or in physicians' offices. Such program may also provide for the furnishing of such services to such families and individuals by means of payments (in the nature of premiums or partial premiums or reimbursement of expenses or otherwise) by the State, to any voluntary health, medical, or hospital insurance fund, or other fund, operated not for profit, in behalf of those families and individuals unable to pay the whole cost of such services or insurance therefor. Such program shall provide for the collection of proper charges of less than the total cost of such services from persons unable to pay in whole, but able to pay in part therefor. Such program may include and take account of services rendered or to be rendered by governmental subdivisions of the State, and by private organizations operating not for profit, and may provide for the payment to such institutions by the State or subdivision for care to such families and individuals. Such program may also include payments to physicians practicing in areas which, without such payments, would be unable to provide sufficient income to attract a practicing physician.

"(5) describe the financial contribution for the support of the plan to be made by the State, its local subdivisions, and its private institutions, which contributions shall be sufficient to carry out the program described in paragraph (4) at the end of said period of five years. The financial contribution to be made by the State and its governmental subdivisions shall be at least equal to the amount contributed for similar purposes in the year 1946, and at least equal to the Federal aid payable under this title: *Provided,* That nothing herein shall modify obligations assumed by the Federal Government under other statutes for the medical and hospital care of veterans;

"(6) set forth the relative need of the various proposals required to carry out the plan and provide for the proper priority between such proposals, based upon such need, as financial resources become available;

"(7) be based on a State-wide inventory of existing medical, surgical, and hospital care, including that provided by the State and by private organizations, and shall describe in detail the extension of such services to the end that they be furnished without discrimination on account of race, creed, or color to all persons unable to pay in full therefor;

"(8) provide that the State agency will make such reports in such form and containing such information as the Director may from time to time reasonably require and give the Director, upon demand, access to the records upon which the information is based;

"(9) provide that the State agency will from time to time review its State plan and the operation thereof and submit to the Director any modifications thereof which it considers necessary.

"(b) The Director shall approve any plan and any modification thereof which fulfills the conditions specified in subsection (a). If any such plan or modification thereof shall have been disapproved by the Director for failure to comply with subsection (a), the National Health Council shall, upon request of the State agency, afford it an opportunity for hearing. If such Council determines that the plan or modification complies with the provisions of such subsection, the Director shall thereupon approve such plan or modification. No plan or modification shall be disapproved because the Director disapproves of the methods proposed if the program is designed and calculated by July 1, 1952, to provide hospital services, surgical services, medical services, and periodic physical examinations as required by section 712 (a) (4) at a cost within the probable financial resources of the State with Federal aid. It is intended that the State shall devise in each case the methods by which this end is attained.

"SEC. 713. Each State for which a State plan has been approved prior to or during a fiscal year shall be entitled for such year to an allotment of a sum bearing the same ratio to the sum appropriated pursuant to section 711 for such year as the product of (a) the population of such State, and (b) its percentage of taxpaying ability, bears to the sum of the corresponding products for all the States having plans approved. Its percentage of taxpaying ability shall be that percentage which bears the same ratio to 50 per centum as the per capita income of the continental United States (excluding Alaska) bears to the per capita income of such State, except that such percentage shall in no case be more than 66 2/3 per centum or less than 25 per centum. The Director with the approval of the Administrator shall calculate the allotments to be made under this section and notify the Secretary of the Treasury of the amounts thereof.

"Sums allotted to a State for a fiscal year and remaining unencumbered at the end of such year shall remain available to such State for such purpose for the next fiscal year (and for such year only), in addition to the sums allotted to such State for such next fiscal year. Any amount of the sum authorized to be appropriated for a fiscal year which is not appropriated for such year, or which is not allotted in such year by reason of the failure of any State or States to have plans approved under this title, or any amount allotted to a State, but remaining unencumbered at the end of the period for which it is available to such State, is hereby authorized to be appropriated for the next fiscal year in addition to the sum otherwise authorized under section 711.

"SEC. 714. (a) At the end of each year each State shall make a complete report to the Director setting forth in full the activities of the State and its governmental subdivisions in the field covered by this title showing the manner in which the funds received from the Federal Government have been expended by the State and its governmental subdivisions in connection therewith together with such other information as the Director may reasonably require. If the Director, after reasonable notice and opportunity for hearing to the State agency, finds (1) that the State agency is not complying substantially with the provisions of the plan theretofore approved by the Director; or (2) that any Federal funds have been diverted from the purposes for which they have been allotted or paid under this title, or (3) that the State and its governmental subdivisions have failed to provide toward the carrying out of such plan at least as much money as they have received from the Federal Government, the Director, with the approval of the Administrator, shall forthwith notify the Secretary of the Treasury and the State agency that no further certification will be made under section 713, and he shall withhold such further certifications until there is no longer any failure to comply.

"(b) If any State is dissatisfied with the Director's action under subsection (a), such State may appeal to the United States circuit court of appeals for the circuit in which such State is located. The summons and notice of

appeal may be served at any place in the United States. The Director shall forthwith certify and file in the court the transcript of the proceedings and record on which he based his action.

"The findings of fact by the Director, unless substantially contrary to the weight of evidence, shall be conclusive; but the court for good cause shown may remand the case to the Director to take further evidence, and the Director may thereupon make new or modified findings of fact and may modify his previous action, and shall certify to the court the transcript and record of the further proceedings. Such new or modified findings of fact shall likewise be conclusive unless substantially contrary to the weight of the evidence.

"The court shall have jurisdiction to affirm the action of the Surgeon General or to set it aside, in whole or in part. The judgment of the court shall be subject to review by the Supreme Court of the United States upon certiorari or certification as provided in sections 239 and 240 of the judicial code, as amended.

"SEC. 715. (a) The Director is authorized to make such administrative regulations as he finds necessary to carry out the provisions of this title.

"(b) In administering this title, the Director shall consult with a National Medical Care Council consisting of the Director ex officio, who shall serve as Chairman, and eight members appointed by the Administrator. Five of the eight appointed members shall be persons who are outstanding in fields pertaining to medical and hospital care, at least four of whom shall be doctors of medicine. The other three appointive members shall be persons familiar with the needs for medical and hospital care in urban or rural areas. Each appointed member shall hold office for a term of four years, except that any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term, and the terms of office of the members first taking office shall expire, as designated by the Administrator at the time of appointment, two at the end of the first year, two at the end of the second year, two at the end of the third year, and two at the end of the fourth year after the date of the appointment. An appointed member shall not be eligible to serve continuously for more than two terms but shall be eligible for reappointment if he has not served two consecutive terms immediately preceding his reappointment. The Council is authorized to appoint such special and technical committees as may be useful in carrying out its functions. Appointed Council members and members of advisory or technical committees while serving on the business of the Council, shall receive compensation at rates fixed by the Administrator, but not exceeding $25 per day, and shall also be entitled to receive an allowance for actual and necessary travel and subsistence expenses while serving away from their places of residence. The Council shall meet as frequently as the Administrator deems necessary, but not less than once each quarter. Upon request by three or more members, it shall be the duty of the Administrator to call a meeting of the Council.

"(c) In administering the provisions of this title the Director is authorized to utilize the services and facilities of any executive department or agency in accordance with an agreement with the head thereof. Payment for such services and facilities shall be made in advance or by way of reimbursement, as may be agreed upon between the Director and the head of the department or agency furnishing them.

"SEC. 716. Whenever in his opinion the purposes of this title would be promoted by a conference, the Director may invite representatives of as many State agencies, designated in accordance with section 712 (a) (1), to confer as he deems necessary or proper. Upon the application of five or more of such State agencies, it shall be the duty of the Director to call a conference of representatives of all State agencies joining in the request. A conference of the representatives of all such State agencies shall be called annually by the Director.

"SEC. 717. Except as otherwise specifically provided, nothing in this title shall be construed as conferring on any Federal officer or employee the right to exercise any supervision or control over the administration, personnel, maintenance, or operation of the health services with respect to which any funds have been or may be expended under this title.

"SEC. 718. (a) As used in this title, the term 'Council' means the National Health Council.

"(b) As used in this title, the term 'Director' means the Director of Medical and Hospital Care Services.

"Title VIII — Dental Health Services for School Children and Families and Individuals with Low Income

"Part A — Dental Survey

"SEC. 801. In order to assist the States in carrying out the purposes of section 811, there is hereby authorized to be appropriated the sum of $1,000,000, to remain available until expended. The sums appropriated under this section shall be used for making payments to States which have submitted, and had approved by the Director, State applications for funds for carrying out such purposes.

"SEC. 802. (a) To be approved, a State application for carrying out the purposes of section 801 must—

"(1) designate a single State agency as the sole agency for carrying out such purposes: *Provided,* That after a State plan has been approved under section 812 (b), any further survey or programing functions shall be carried out, pursuant to section 812 (a) (8), by the agency designated in accordance with section 812 (a) (1);

"(2) provide for the designation of a State advisory council, which shall include representatives of nongovernment organizations or groups, and of State agencies, concerned with the provision of dental care services, including representatives of the users of dental care services selected from among persons familiar with the need for such services in urban or rural areas, to consult with the State agency in carrying out such purposes;

"(3) provide for making an inventory and survey in accordance with section 812 (a) (7) containing all information required by the Director, and for developing a program in accordance with section 812 (a) and with regulations prescribed under section 815 (a), and

"(4) provide that the State agency will make such reports, in such form and containing such information, as the Director may from time to time reasonably require, and give the Director, upon demand, access to the records on which such reports are based.

"(b) The Director shall approve any application for funds which complies with the provisions of subsection (a).

"SEC. 803 (a) Each State for which a State application under section 802 has been approved shall be entitled to an allotment of such proportion of any appropriation made pursuant to section 801 as its population bears to the population of all the States, and within such allotment it shall be entitled to receive 33 1/3 per centum of its expenditures in carrying out the purposes of section 801 in accordance with its application: *Provided,* That no such allotment to any State shall be less than $10,000. The Director shall from time to time estimate the sum to which each State will be entitled under this section, during such ensuing period as he may determine, and shall thereupon certify to the Secretary of the Treasury the amount so estimated, reduced or increased, as the case may be, by any sum by which the Director finds his estimate for any prior period was greater or less than the amount to which the State was entitled for such period. The Secretary of the Treasury shall thereupon, prior to audit or settlement by the General Accounting Office, pay to the State, at the time or times fixed by the Director, the amount so certified.

"(b) Any funds paid to a State under this section and not expended for the purposes for which paid shall be repaid to the Treasury of the United States.

"Part B — Dental Care Services

"SEC. 811. In order to assist the States to provide dental examination for school children, and necessary dental care for those school children and other individuals and families unable to pay the whole cost of such care in accordance with the provisions of this title, there is hereby authorized to be appropriated for the fiscal year ending June 30, 1947, the sum of $8,000,000; for the fiscal year ending June 30, 1948, the sum of $12,000,000; for the fiscal year ending June 30, 1949, the sum of $16,000,000, and for the fiscal years ending June 30, 1950, and June 30, 1951, the sum of $20,000,000 each. The sums appropriated pursuant to this section shall be used for making payments to States which have submitted, and had approved by the Director, State plans in accordance with the provisions of this title.

"SEC. 812. (a) Any State desiring to take advantage of this title may submit a State plan for carrying out its purposes. Such plan must—

"(1) designate a single State agency as the sole agency for administration of the plan or designate such agency as the sole agency for supervising the administration of the plan, providing that after 1949 such agency shall be the State health agency;

"(2) provide for the designation by the Governor of a State dental health advisory council, which shall include representatives of nongovernmental groups or organizations, and of State agencies, concerned with the providing and administering of dental health services, including representatives of State dental associations and other groups interested in the improvement of dental health and in the better distribution of dental services;

"(3) contain satisfactory evidence that the State agency, designated in accordance with paragraph (1), in cooperation with other public and private agencies, will have authority to carry out such plan in conformity with this title;

"(4) set forth a State-wide program designed and calculated within five years to provide for the periodic inspection of the teeth of all children in the elementary and secondary grades of the public and nonpublic schools in the State, and to provide for the dental care and treatment of dental diseases and dental defects, including prophylaxis, filling, X-ray, extraction, and related care, other than straightening, of the teeth of those children in the elementary and secondary grades of public and nonpublic schools of the State who, and whose family or guardian, have insufficient income to pay for the whole cost of such services. Such program may also at the option of the State provide dental care for those families and individuals in the State having insufficient income to pay the whole cost of such service. Such program shall provide for the collection of proper charges of less than the total cost of services rendered under this paragraph to individuals and families unable to pay in whole, but able to pay in part therefor. Such program may also provide for the furnishing of such services to such families and individuals by means of payments (in the nature of premiums, or partial premiums, or reimbursement of expenses, or otherwise) by the State to any nonprofit voluntary dental care fund or other fund operated not for profit, in behalf of those families and individuals unable to pay the whole cost of such services or insurance therefor. Such program may include and take account of services rendered or to be rendered by governmental subdivisions of the State, and by private organizations operating not for profit, and may provide for the payment to such institution by the State or subdivision for dental care to such families and individuals. Such program may include payments to dentists practicing in areas which, without such payments, would be unable to provide sufficient income to attract a practicing dentist. Such program may provide for the training of personnel for State and local public health work in dentistry;

"(5) describe the financial contribution for the support of the plan to be made by the State, its local subdivisions, and its private institutions, which contributions shall be sufficient to carry out the program described in paragraph (4) at the end of said period of five years. The financial contribution to be made by the State and its governmental subdivisions shall be at least equal to the Federal aid payable under this title; provided that nothing herein shall modify obligations assumed by the Federal government under other statutes for the medical and hospital care of veterans;

"(6) be based on a State-wide inventory of existing dental care including that provided by the State and by private organizations, and shall describe in detail the extension of such services to the end that they be furnished without discrimination on account of race, creed, or color to all persons unable to pay in full therefor;

"(7) provide that the State agency will make such reports in such form and containing such information as the Director may from time to time reasonably require and give the Director, upon demand, access to the records upon which the information is based;

"(8) provide that the State agency will from time to time review its State plan and the operation thereof and submit to the Director any modifications thereof which it considers necessary.

"(b) The Director shall approve any State plan and any modification thereof which fulfills the conditions specified in subsection (a).

If any such plan or modification thereof shall have been disapproved by the Director for failure to comply with subsection (a), the National Dental Health Council shall, upon request of the State agency, afford it an opportunity for hearing. If such Council determines that the plan or modification complies with the provisions of such subsection, the Director shall thereupon approve such plan or modification. No plan or modification shall be disapproved because the Director disapproves of the methods proposed if the program is designed and calculated by July 1, 1952, to provide dental care, treatment, and examination, as required by section 812 (a) (4), at a cost within the probable financial resources of the State with Federal aid. It is intended that the State shall devise in each case the methods by which this end is attained.

"SEC. 813. Each State for which a State plan has been approved prior to or during a fiscal year shall be entitled for such year to an allotment of a sum bearing the same ratio to the sum appropriated pursuant to section 811 for such year as the product of (a) the population of such State, and (b) its percentage of taxpaying ability, bears to the sum of the corresponding products for all of the States having plans approved. Its percentage of taxpaying ability shall be that percentage which bears the same ratio to 50 per centum as the per capita income of the continental United States (excluding Alaska) bears to the per capita income of such State, except that such percentage shall in no case be more than 66 2/3 per centum or less than 25 per centum. The Director with the approval of the Administrator shall calculate the allotments to be made under this section and notify the Secretary of the Treasury of the amounts thereof.

"Sums allotted to a State for a fiscal year and remaining unencumbered at the end of such year shall remain available to such State for such purpose for the next fiscal year (and for such year only), in addition to the sums allotted to such State for such next fiscal year. Any amount of the sum authorized to be appropriated for a fiscal year which is not appropriated for such year, or which is not allotted in such year by reason of the failure of any State or States to have plans approved under this title, in any amount allotted to a State, but remaining unencumbered at the end of the period for which it is available to such State, is hereby authorized to be appropriated for the next fiscal year in addition to the sum otherwise authorized under section 801.

"SEC. 814. (a) At the end of each year each State shall make a complete report to the Director setting forth in full the activities of the State and its governmental subdivisions in the field covered by this title showing the manner in which the funds received from the Federal Government have been expended and the amount expended by the State and its governmental subdivisions in connection therewith together with such other information as the Director may reasonably require. If the Director after reasonable notice and opportunity for hearing to the State agency finds (1) that the State agency is not complying substantially with the provisions of the plan theretofore approved by the Director, or (2) that any Federal funds have been diverted from the purposes for which they have been allotted or paid under this title, or (3) that the State and its governmental subdivisions have failed to provide toward the carrying out of such plan at least as much money as they have received from the Federal Government, the Director, with the approval of the Administrator, shall forthwith notify the Secretary of the Treasury and the State agency that no further certification will be made under section 813, and he shall withhold further certification until there is no longer any failure to comply.

"(b) If any State is dissatisfied with the Director's action under subsection (a), such State may appeal to the United States court of appeals for the circuit in which such State is located. The summons and notice of appeal may be served at any place in the United States. The Director shall forthwith certify and file in the court the transcript of the proceedings and the record on which he based his action.

"The findings of fact by the Director, unless substantially contrary to the weight of evidence, shall be conclusive; but the court for good cause shown may remand the case to the Director to take further evidence, and the Director may thereupon make new or modified findings of fact and may modify his previous action, and shall certify to the court the transcript and record of the further proceedings. Such new or modified findings of fact shall likewise be conclusive unless substantially contrary to the weight of the evidence.

"The court shall have jurisdiction to affirm the action of the Director or to set it aside,

in whole or in part. The judgment of the court shall be subject to review by the Supreme Court of the United States upon certiorari or certification as provided in sections 239 and 240 of the judicial code, as amended.

"SEC. 815. (a) The Director is authorized to make such administrative regulations as he finds necessary to carry out the provisions of this title.

"(b) In administering this title, the Director shall consult with a National Dental Health Council consisting of the Director ex officio, who shall serve as chairman, and six members appointed by the Administrator. The six appointed members shall be persons not otherwise in the employ of the Federal Government who are outstanding in fields pertaining to dental health, at least four of whom shall be doctors of dental surgery who have had not less than ten years of active practice and who are licensed to practice dentistry in one or more of the States. The other two appointive members shall be persons familiar with the needs for dental care in urban or rural areas. Each appointed member shall hold office for a term of three years except that any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term, and the terms of office of the members first taking office shall expire, as designated by the Administrator at the time of appointment, two at the end of the first year, two at the end of the second year, and two at the end of the third year after the date of appointment. An appointed member shall not be eligible to serve continuously for more than two terms but shall be eligible for reappointment if he has not served for two consecutive terms immediately prior to his reappointment. The Council is authorized to appoint such special advisory and technical committees as may be useful in carrying out its functions. Appointed Council members and members of advisory or technical committees, while serving on the business of the Council, shall receive compensation at rates fixed by the Administrator, but not to exceed $25 per day, and shall also be entitled to receive an allowance for actual and necessary travel and subsistence expenses while so serving away from their places of residence. The Council shall meet as frequently as the Administrator deems necessary, but not less than once each quarter. Upon request by three or more members, it shall be the duty of the Administrator to call a meeting of the Council.

"(c) In administering the provisions of this title, the Director is authorized to utilize the services and facilities of any executive department or agency in accordance with an agreement with the head thereof. Payment for such services and facilities shall be made in advance or by way of reimbursement, as may be agreed upon between the Surgeon General and the head of the department or agency furnishing them.

"SEC. 816. Whenever in his opinion the purposes of this title would be promoted by a conference the Director may invite representatives of as many State agencies, designated in accordance with section 802 (a), to confer as he deems necessary and proper. Upon the application of five or more of such State agencies, it shall be the duty of the Director to call a conference of representatives of all State agencies joining in the request. A conference of the representatives of all such State agencies shall be called annually by the Director.

"SEC. 817. Except as otherwise specifically provided, nothing in this title shall be construed as conferring on any Federal officer or employee the right to exercise any supervision or control over the administration, personnel maintenance, or operation of the dental health services with respect to which any funds have been or may be expended under this title.

"Sec. 818 (a) As used in this title, the term 'Council' means the National Dental Health Council.

"(b) As used in this title, the term 'Director' means the Director of Dental Care Services.

"Title IX — Further Research and Training

"Part A — Dental Research

"SEC. 901. The National Institute of Dental Research shall be a division in the National Institute of Health.

"SEC. 902. In carrying out the purposes of section 301 with respect to dental research, the Surgeon General, through the National Institute of Dental Research, and in cooperation with the National Dental Health Council, is authorized in addition to the powers conferred by section 301—

"(a) to conduct, assist, and foster research, investigations, experiments, demon-

strations, and studies relating to the cause, treatment, control, and prevention of dental diseases and impairments;

"(b) to promote the coordination of research conducted by the Institute and similar research conducted by other public and private agencies, organizations, and institutions, and to make grants-in-aid to public and private agencies, organizations, and institutions for conducting the kind of research authorized in paragraph (a);

"(c) to provide fellowships in the National Institute of Dental Research and in other public and private institutions assisted under paragraph (b) with such stipends and allowances (including traveling and subsistence expenses) as he may deem necessary for the purpose of obtaining the consultation and advice of persons who are experts in the field of dental diseases from the United States and abroad, and of training persons to carry on research activities.

"SEC. 903. In cooperating with the Surgeon General in carrying out the authority contained in section 902, the National Dental Health Council is authorized, either itself or through advisory councils which it may establish—

"(a) to review research projects or programs submitted to, or initiated by it, relating to the study of the causes, treatment, control, or prevention, of dental diseases and impairments, and certify approval to the Surgeon General, for prosecution, under section 902, of any such projects which it believes show promise of making valuable contributions to human knowledge with respect to the causes, prevention, or methods of treatment of dental diseases;

"(b) to collect information as to studies which are being carried on in the United States or any other country as to the cause, prevention, or methods of treatment of dental diseases, by correspondence or by personal investigation of such studies, and with the approval of the Surgeon General make available such information through the appropriate publications for the benefit of dental agencies and organizations (public or private), dentists, or any other scientists, and for the information of the general public;

"(c) to review applications from any university, hospital, dental clinic, or other institution, whether public or private, for grants-in-aid for research projects relating to dental health, and to certify to the Surgeon General its approval of grants-in-aid in the cases of such projects as show promise of making valuable contributions to human knowledge with respect to such problems;

"(d) to recommend to the Surgeon General for acceptance conditional gifts pursuant to section 501 of this Act; and

"(e) to make recommendations to the Surgeon General with respect to carrying out the provisions of this part.

"SEC. 904. Upon recommendation pursuant to section 903 (d) to the Surgeon General by the National Dental Health Council of acceptance of conditional gifts pursuant to section 501 of this Act, for study, investigation, or research under the provisions of this part, or for the acquisition of grounds or for the erection, equipment, or maintenance of premises, buildings, or equipment of the National Institute of Dental Research, the Surgeon General may recommend to the Administrator acceptance of such conditional gifts in accordance with section 501. Donations of $50,000 or over in aid of research under this part may be acknowledged by the establishment within the National Institute of Dental Research of suitable memorials to the donors.

"SEC. 905. There are hereby authorized to be appropriated, in order to carry out the purposes of this part for research and scholarships in the field of dental health, the following sums for the years and purposes indicated: For the fiscal year ending June 30, 1947, for grants-in-aid for dental research and training not to exceed $75,000, and for research and scholarships within the National Institute of Dental Research not to exceed $175,000; for the fiscal year ending June 30, 1948, for grants-in-aid for dental research and scholarships not to exceed $150,000, and for research and scholarships within the National Institute of Dental Research not to exceed $250,000; and for subsequent fiscal years for grants-in-aid for dental research and scholarships not to exceed $300,000, and for dental research and scholarships within the National Institute of Dental Research not to exceed $300,000.

"Part B — New Construction for Research

"SEC. 911. There is hereby authorized to be appropriated a sum not to exceed $2,000,000 for the erection and equipment of a suitable

and adequate building and other facilities for the use of the National Institute of Dental Research in carrying out the provisions of this title. The Administrator is authorized to acquire, by purchase, condemnation, donation, or otherwise, a suitable and adequate site or sites in or near the District of Columbia for such building and facilities, and to erect thereon, furnish, and equip such building and facilities when funds are made available. The amount authorized to be appropriated in this section shall include the cost of preparation of drawings and specifications, supervision of construction, and other administrative expenses incident to the work."

SEC. 205. Section 1 of the Public Health Service Act, as amended, is hereby further amended to read:

"SECTION 1. Titles I to IX, inclusive, of this Act may be cited as the 'Public Health Service Act.' "

Title III — Miscellaneous

SEC. 301. The Act of July 1, 1944 (58 Stat. 682), as amended, is hereby further amended by changing the number of title VII to title X, and by changing the numbers of sections 701 to 712, inclusive, and references thereto, to sections 1001 to 1012, respectively.

SEC. 302. All functions relating to the administration of the Public Health Service formerly exercised by the Secretary of the Treasury, and transferred to the Federal Security Administrator pursuant to section 205 (b) of Reorganization Plan Numbered I, are hereby transferred to the National Health Administrator.

SEC. 303. Sections 201 (c) and (d) of the Federal Food, Drug, and Cosmetic Act, as amended (21 U. S. C. 301ff.), are hereby amended to read as follows:

"(c) The term 'Agency' means the National Health Agency.

"(d) The term 'Administrator' means the National Health Administrator."

SEC. 304. In the following sections of title 24, United States Code, chapter 4, relating to Saint Elizabeths Hospital, there shall be substituted for the words "Federal Security Administrator," wherever they occur, the words "Surgeon General of the Public Health Service": Sections 164, 165, 166, 167, 168, 169, 170, 180, 181, 184, 191a, 196b, and 211.

SEC. 305. Section 179 of title 24, United States Code, is hereby amended to read as follows:

"The Superintendent of Saint Elizabeths Hospital shall make a report through the Surgeon General of the Public Health Service to Congress annually at the beginning of each regular session, which shall show in detail the receipts and expenditures for all purposes connected with the hospital for the fiscal year preceding such session."

SEC. 306. Upon the direction of any officer or employee of the Government of the United States, requesting the Government to deduct from the salary of such employee a fixed sum or percentage to be paid to any voluntary nonprofit health insurance fund, said sum or percentage shall be deducted from the salary of such employee or officer, and shall be paid as directed by him. The term "United States" in this section shall be deemed to include all departments, bureaus, agencies, and other divisions of the Government and also corporations, the stock of which is wholly owned by the said Government. The term "health insurance fund" shall be deemed to include any nonprofit organization undertaking to provide, or to insure against the expense of, hospital, medical, dental, or any other services connected with health.

SEC. 307. The Secretary of the Treasury is authorized and directed, beginning with the fiscal year ending June 30, 1948, to deposit for each year in a special fund in the Treasury of the United States proceeds of taxes, duties, imposts, or excises in an amount equal to the aggregate of the amounts authorized to be appropriated for such year under this Act. Amounts deposited in such fund shall be available for expenditure only pursuant to appropriations made under authority of this Act, and no moneys shall be payable on any of said appropriations except from said fund. Any amounts remaining in the fund after the expiration of the period for which such amounts are available for expenditure shall be covered into the general fund of the Treasury.

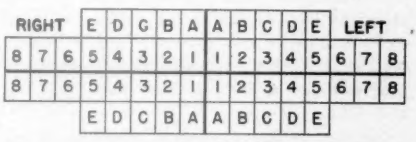
SEC. 308. If any provision of this Act, or the application thereof to any person or circumstance, is held invalid, the remainder of the Act and the application of such provision to other persons or circumstances shall not be affected thereby.

COMMITTEE ON NOMENCLATURE

COMMITTEE ADOPTS OFFICIAL METHOD FOR THE SYMBOLIC DESIGNATION OF TEETH

THE requests that have come to the Committee on Nomenclature for recommendation of a standard method for the symbolic designation of teeth indicate the need for a method recognized as official by the American Dental Association. At present, no uniformity prevails on this subject. The dental schools, the several military dental corps, the Veterans Administration and other institutions offering dental care employ methods that differ widely. In the absence of a method recognized as official, the dental records of such institutions are unintelligible without explanatory comments concerning the method used for the symbolic designation of teeth.

This Committee has adopted as official for the American Dental Association the method illustrated in the accompanying figure. This method is based on accepted principles of anatomic description. In describing body structures, anatomists do so in relation to an accepted anatomic position of the subject. The human body is viewed in an upright position with the observer facing the subject. If this principle is utilized in designating teeth, a vertical line symbolizes the median plane and a horizontal line symbolizes the occlusal plane. The dental field is thereby divided into quadrants. The teeth of the second or permanent dentition are designated numerically 1 through 8, starting with the central incisors, in relation to these two symbolic lines. The teeth of the first (deciduous) dentition are similarly designated by the letters A through E. Numerals and letters appearing above the horizontal line designate maxillary teeth. Those below the horizontal line designate mandibular teeth. Designations of teeth on the right side appear with the vertical line to their right; designations of teeth on the left side have the vertical line on their left. Thus the symbol $\lfloor\overline{3}$ would indicate the mandibular left cuspid.



Plan recommended by Committee on Nomenclature for symbolic designation of teeth

It is recommended that all dentists and institutions offering dental care utilize this method for the symbolic designation of teeth in their records.—*Harry Lyons, Chairman.*

BOOK REVIEWS

The People Look at Radio. By Paul F. Lazarsfeld and Harry Field. 158 pages. Chapel Hill, N. C.: University of North Carolina Press, 1946.

According to a survey conducted by the National Opinion Research Center of the University of Denver, two-thirds of the American public have no objection to radio as it is, including the advertising. Less than one-third of the radio listeners have real negative feelings about radio advertising and individual programs such as "soap operas," quiz programs and commentators.

Another rather unexpected conclusion recorded in the survey is that 82 per cent of the population ranked the public service of radio above that of churches and schools. Program preferences were found generally to be in line with those reported by previous analysts. News broadcasts were by far the most popular type of program. Next, evening listeners listed radio plays, comedy programs and quiz programs as their favorites, in that order. Talks and discussions about public issues, the category in which dental health broadcasts presumably would be placed, ranked just ahead of classical music, which in turn was slightly more popular than sports events. Daytime listeners, mostly women, ranked homemaking programs second to news broadcasts and expressed liking for "old familiar music" and "soap operas."

Nearly half of the book is devoted to charts showing percentage differences in opinion. There is an interesting explanation of question-phrasing technics that were adopted to cross-check results. The authors pose the old question of whether changes should be made when the majority of the people are satisfied.

If radio wanted proof that, on the basis of public opinion, it could be satisfied with itself as it is, this survey gives it a favorable answer. Lazarsfeld and Field point out that the critics, although they are in the minority, are generally better educated and more vocal than the satisfied majority. The authors warn that the present popularity of radio rests with a generally passive and less-educated group, vulnerable to the more articulate minority. In the matter of radio as an educational device, the authors stress the important point that radio should keep the volume of educational broadcasts slightly above what the masses want in the hope that it may contribute to a systematic rise in the general cultural level without driving the audience away. This, of course, will not satisfy radio's more vocal critics but it may be a workable compromise and at least a step forward.

Although primarily statistical in approach the book is one of the more serious attempts to evaluate radio in our social order. It was subsidized by the industry itself. The authors were given a free hand and are to be commended for pointing out that the radio audience someday may outgrow the present level of broadcasts. There is a distinct need for more surveys of this nature.—*Herbert B. Bain.*

New Drugs. By Arthur D. Herrick. 319 pages. Price $4.75. New York: Revere Publishing Company, 1946.

Until the present Food, Drug and Cosmetic Act was passed by Congress in 1938, a manufacturer could distribute a new drug in interstate commerce without obtaining permission from the Food and Drug Administration. The Elixir Sulfanilamide incident[1] in 1937 emphasized the need for restrictions to protect the public from dangerous new pharmaceutical preparations.

The Food, Drug and Cosmetic Act of 1938 provides that new drugs must pass scrutiny by the Food and Drug Administration before they are marketed in interstate commerce. The first half of this book explains the procedures which should be followed by those who wish to market such products. The remainder is devoted to a historical summary of the Elixir Sulfanilamide incident, a copy of the Federal Food, Drug and Cosmetic Act, excerpts of new drug provisions from the laws of several states and the rules of the Council on Pharmacy and Chemistry of the American Medical Association.

The book provides information which will be interesting and helpful to drug manufacturers and distributors as well as to those others

1. *J.A.M.A.* 108:1340 (April 17) 1937; 108:1888 (May 29) 1937; 109:358 (July 31) 1937; 109:1198 (October 9) 1937; 109:1367 (October 23) 1937; 109:1454 (October 30) 1937; 109:1531 (November 6) 1937; 109:1724 (November 20) 1937; 111:919 (September 3) 1938. Composite reprints of these articles may be obtained by writing to the American Medical Association, 535 North Dearborn St., Chicago 10.

who wish to understand the legal precautions which have been established with respect to new drugs by the federal government and some of the states. The book is well written, and the author has obtained the advice of properly qualified authorities in its preparation.—*Donald A. Wallace.*

Cornell Conferences on Therapy, Vol. I. Edited by Harry Gold, M.D. 322 pages. Cloth. Price $3.25. New York: Macmillan Co., 1946.

Since 1937 it has been the custom of the staff of the Cornell University Medical College and Hospital to hold weekly conferences on selected topics, such as a group of drugs, a therapeutic procedure, a symptom or a disease. Members of the staffs of the Rockefeller Institute for Medical Research, the College of Physicians and Surgeons (New York), the College of Medicine of New York University and the New York Post-Graduate Medical School of Columbia University have participated.

The conferences are reported in the form of minutes, and the names of those who enter into the discussion precede their remarks. The high qualifications of those who take part are obvious, and their comments are interesting and informative.

Among the chapters which will be of special interest to dentists are "Hypnotics and Sedatives," "Psychologic Aspects of the Relief of Pain," "Treatment of Heart Failure" (two chapters), "Treatment of Subacute Bacterial Endocarditis" and "Treatment of Poisoning."

Fifteen conferences are reported in this book. Some of them have been published previously in various issues of the *Journal of the American Medical Association*, and those which are more recent have been printed in the *New York Journal of Medicine*. This is the first volume of a series, one volume of which is to be published each year.

The book provides excellent reading for those dentists who are especially interested in therapeutics. It offers much valuable and generally reliable information in easily readable form.—*Donald A. Wallace.*

The Outlook for Women in Occupations in the Medical and Other Health Services: Trends and Their Effect upon the Demand for Women Workers. Bulletin 203, Number 12, United States Department of Labor, Women's Bureau. 55 pages. Washington, D. C.: Government Printing Office, 1946.

This bulletin presents a realistic picture of the postwar employment possibilities for women in the health service field. Although the information concerning occupations in dentistry is somewhat limited owing to the lack of separate statistics for this group, the report does provide facts of a general sort for those women interested in a career of dentistry either as a practitioner, a dental assistant or a dental hygienist. Earlier pamphlets in this series discussed in greater detail the occupations of women dentists, dental hygienists and dental assistants.

The summary indicates that the supply of personnel in the field depends upon the minimum employment or licensing standards, the specialized training required and the earnings. In 1940 there were approximately 14,000 dental assistants, 5,000 dental hygienists and 1,000 women dentists.

The demand for dental personnel has grown concomitantly with the increasing population's need and desire for oral health. The author points out that, as the problem of financing this additional care is solved, the need for health servants will grow. The outlook for women who intend to qualify as dentists remains bright for some years at least, owing to the prewar shortage and the anticipated postwar shortage of men in this classification. For several years the supply of dental hygienists will be insufficient to provide adequately for the demand created by the public's increasing interest in oral health and by the shortage of dentists. As applicants for training in dental hygiene far exceed the capacity of the training schools, those with superior scholastic backgrounds and those applying for the longer degree-conferring courses are more likely to be accepted.

The final chapter discusses the geographic variations in demand and the effect of age, marital status, race and physical handicaps on employment or practice possibilities.

The report concludes that, on the whole, satisfying opportunities for women in the health services will increase as women are given improved working conditions and higher wages as well as the equality of opportunity now afforded them in many specific situations in this classification but not yet in all.—*P. Wakefield.*

CURRENT LITERATURE

What Role Do Treponema Vincenti Play in Certain Diseases of the Gingiva? Harry S. Klein, Stockholm. Acta odont. Scandinav. 7:92, May 1946.

The author points to the lack of information regarding Borrelia vincenti in normal gingivae or in various types of periodontal disease. He then gives the results of a detailed study of vincenti organisms in 71 patients having three characteristic clinical appearances, namely, gingivitis simplex, periodontitis marginalis superficialis and periodontitis marginalis profunda. He found that the number of Vincent's spirochetes was the lowest in persons with normal gingivae, somewhat higher in those having gingivitis and superficial periodontitis and highest in those having deep periodontitis. From this study the author assumes that the spirochetes are of etiologic significance in gingival and periodontal diseases.—*R. W. B.*

The Significance of the High Arched Palate. R. C. Moehlig and J. J. Gadbaw. Harper Hosp. Bull. 4:168, September 1946.

The influence of the pituitary gland on mesodermal tissues is shown by the person with acromegalia who has a conspicuous overdevelopment of such tissue systems as the osseous, skeletal-muscular and hematopoietic which arise from that layer. The anterior lobe of the pituitary gland arises from the ectoderm layer in the region of the roof of the mouth. Twenty-one patients, studied because of apparent dysfunction of the pituitary gland, had high arched palates, which appear to be related to the development of the pituitary gland and may be the result of abnormal embryologic development and consequent functional derangement of this gland. Evidence appears to favor the theory that disturbance of the pituitary gland is the cause of the abnormal arching, though this question is not settled.—*D. F. Mitchell.*

The Incidence of Dental Caries in Bombay. J. U. Bhat and M. V. Shelty. Indian D. J. 18:113, August-September 1946.

A survey is reported of dental examinations of 1,988 students, ranging in age from 3 to 32 years, in Bombay schools and colleges. Although in India large numbers of older persons are known to have sound teeth and freedom from caries, among this younger group 73.65 per cent had carious teeth. Of those who drank milk 69.97 per cent had caries, and of those who did not drink milk 78.28 per cent had caries. Among the strict vegetarians 66.40 per cent had caries, and among the nonvegetarians the incidence of caries was 73.83 per cent. Of those who used toothbrushes 74.50 per cent had caries while 68.30 per cent of those who used their fingers only to clean their teeth had caries. Among those who ate a large amount of sweets and chocolate 66.67 per cent had caries as compared with 60.01 per cent among those who did not eat sweets.—*R. W. B.*

Investigations in the Properties of Tooth Enamel by Means of X-Rays. A. T. Jensen and E. Moller. Acta. odont. Scandinav. 6:7, December 1944.

An introductory summary of the present knowledge of the crystal structure of the dental hard tissues is followed by a discussion of the nature of combination of the carbonate. Experimental evidence is offered that the carbonate cannot be present as crystalline calcium carbonate. Objections are raised to the theory that carbonate ions enter the apatite lattice. It is concluded that the carbonate in dentin and enamel presumably appears as amorphous calcium carbonate absorptively bound to the surface of the colloidal apatite particles. The lattice constants of hydroxyl apatite $Ca_5(PO_4)_3OH$ were found to be: a=9.431 angstroms, C=6.857 angstroms ± 1:5,000. Tooth enamel has the same lattice constants as hydroxyl apatite but within an error of 1:1,000. This finding furnishes evidence that apatite of dental origin is hydroxyl apatite without carbonate ions in the lattice. Finally, a reflection technic is described which was employed to determine particle size and orientation in areas of enamel much smaller than those in which the transmission or grinding technics are used. The method was used to examine ground and unground enamel surfaces. It was found that the enamel particles in the outermost layer were larger than those lying deeper.—*J. E. Gilda.*

Recent Developments in Fusospirochetal and Related Infections. Theodor Rosebury. J. Periodont. 17:121, July 1946.

The author discusses the use of penicillin for the treatment of oral fusospirochetal infections. In a review of the literature of the subject he finds that in over forty reports there is general agreement that this drug produces almost spectacular results in reducing fusospirochetal activity but that many patients relapse, especially if the administration of the drug is not accompanied with thorough prophylactic instrumentation. He stresses the importance of removing all foreign bodies and irritants from about the teeth. This procedure is facilitated by the rapid reduction of gingival pain after medication. He believes that penicillin is by far the most satisfactory chemical agent for the treatment of fusospirochetal diseases thus far discovered.—*R. W. B.*

Unusual Complications of Spheno-Palatine Block. V. Goodside and S. Weingeist. Am. J. Ophth. 29:1295, October 1946.

The sphenopalatine or maxillary nerve block obtained by inserting the needle through the palatine foramen and the pterygopalatine canal and into the pterygopalatine fossa where 2 cc. of a 1 per cent procaine solution was deposited resulted in unusual reactions in 2 patients. It was inferred that the point of the needle had been carried through the pterygopalatine fossa into the inferior orbital fissure. Temporary paralysis of the external rectus occurred, and double vision was the result. Recovery was complete after the period of anesthesia.—*D. F. Mitchell.*

Oral Spirochetes, Their Occurrence in Diseases of the Oral Cavity and a Simple Method of Pure Cultivation. Harry S. Klein, Stockholm. Acta odont. Scandinav. 5: July 1943.

The author reviews the literature on the oral spirochetal diseases and gives a classification of organisms involved. He gives short descriptions of Vincent's infection and gangrenous stomatitis, or noma, and the organisms usually associated with these infections. He calls attention to the fact that little has been done toward cultivating spirochetes and that there is no definite proof of their pathogenicity.

The author reviews the methods of spirochete cultivation in artificial mediums and shows the difficulties and complexity of technics previously employed. He then describes his own method in which he uses the Fortner plate and implants Bacillus prodigiosus in a plasticine pellet to absorb oxygen. By this method he was able to obtain pure cultures of Treponema microdentium, Treponema macrodentium and Borrelia vincenti. Treponema buccale may be cultivated but, as yet, not in pure culture. This method is a simplification of anaerobic cultivation of spirochetes found in the oral cavity; it is much more practical than those formerly used.—*R. W. B.*

The Evolution and Devolution of the Human Face. E. A. Hooton. Am. J. Orthodont. & Oral Surg. 32:657, December 1946.

The author makes a comprehensive survey of the evolution of the human face in its relation to the development of various species and their environmental requirements. He points out that the development of the face has been directed by the functional needs of the individual, and he gives many interesting examples of facial evolution in response to changes in environmental conditions of the species.

The author does not agree with the view that the larger the brain is the smaller the jaws are, but he states that there may be some compensatory relationship between the size of the brain and that of the face. He discusses the evolution of early man and evidences of hybridism and asymmetric development.

The evolutionary regression of jaw development associated with the advancement of civilization is more prominent in the Whites and less in the Mongoloids and Negroids. It is related to the time which these races have been exposed to the influences of "civilization." Many illustrations of that principle are given.

The author states that the orthodontist in attempting to correct malocclusion must determine whether he is dealing with an evolutionary trend, such as inbreeding, or a pathologic condition resulting from infection, lack of function or malnutrition. Attention is called to the apparent increase in malocclusion in spite of improved infant care and feeding and general nutritional status. Modern transportation, allowing greater travel and hybridization through mixtures of different types of people, is suggested as a possible cause.

Attention is called to the influence on malocclusion of general defective and arrested

growth, disease of the nose and throat and poor health, and the author warns against the attempt to correct malocclusion in the presence of general ill health and functional disturbances. The author believes that in the correction of malocclusion the removal of some teeth to provide room for others is preferable to enlargement of the arches.

The author states as his opinion that man is entering on a terminal and decidedly retrogressive evolutionary course as evidenced in a gradual shrinkage of his brain and jaws. This he considers to be attributable in part to functional atrophy. The modern milling of foods, obviating the necessity of mastication, will undoubtedly bring about the shrinkage and final disappearance of the jaws.—*R. W. B.*

The Employment of the Isotopes in Experimental Dentistry. Jorge Erausquin. Rev. Odontolog. 34:451, October 1946.

A comprehensive review is given of the studies of isotopes made in dental experimentation by various authors. Attention is called to the usefulness of experimental dosage of ionized chemical substances such as phosphorus, calcium and fluorine, and their final deposition in the dental tissues is traced. The radioactive phosphorus (atomic weight 32) is most suitable and most widely used for that purpose.

These isotopes, when injected experimentally in animals, are deposited especially in the outer layers of the enamel, a finding which suggests that they enter the tooth by way of the saliva. The root portion of the tooth, not in contact with the saliva, shows less peripheral deposition, suggesting that the deposition is a simple physiochemical process.

In a consideration of fluorine deposition, the duration of radio activity of that element is short (one hundred and twelve minutes as compared with fourteen days for phosphorus), making observation of fluorine deposition more difficult. It appears that the greatest deposition of fluorine is during the period of tooth development but that there is a possibility of later deposition through oral and intravenous administration and by topical application. There is evidence that the most practical method of fluorine deposition is by way of the saliva in contact with the tooth surface. The action of fluorine on caries is probably a disturbance of microbic activity in the environment of the teeth. The small number of experiments in the field, however, does not warrant positive conclusions.

The author discusses atomic structure and natural and artificial transmutations of the nucleus of various elements. He describes the action of the cyclotron on the atom. This article is a comprehensive review of the literature and includes an extensive bibliography of the contributions to the subject.—*R. W. B.*

Absorbable Gelatin Sponge and Thrombin in Oral Surgery. W. C. Guralnick. Am. J. Orthodont. & Oral Surg. 32:792, December 1946.

The author states that the use of drains, dressings and wicks as "space obliterators" after the extraction of teeth and the extirpation of cysts retards healing. He mentions the use of fibrin foam, by some, with great success, but this material is difficult to obtain.

The use of an absorbable gelatin sponge soaked in beef thrombin is recommended. It is an effective hemostat, is tolerated by the tissues and is completely absorbable. The author reports no unfavorable antigenic reaction to beef thrombin.

The absorbable gelatin sponge soaked in beef thrombin is packed into tooth sockets and partially enclosed wounds. It was used successfully in a case of exposure of the floor of the antrum by the extraction of an upper molar.

The absorbable gelatin sponge was also used after being soaked in saline solution. In this form it appeared highly effective. This finding suggests the possibility of incorporating penicillin or other soluble drugs when indicated. The author reports that there was no postoperative hemorrhage in any case in which the absorbable gelatin sponge and thrombin were employed. Healing seemed to be accelerated and uneventful.—*R. W. B.*

A Study of Salivary Lipase. H. Eggers. Schweiz. Monatsschr. für Zahnheilkunde, Vol. 56, No. 10, 1946.

The author, working in the St. Elizabeth Hospital in Holbäk, Denmark, claims to have demonstrated a fat dissolving enzyme in saliva. He states that this enzyme will dissolve tributyrinase at the rate of 45 per cent in three to four hours. He believes that the chief function of this salivary enzyme is to keep the mouth clean but suggests that it may also play a part in fat digestion.—*R. W. B.*

LIST OF DENTAL OFFICERS

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Lodi	Bergnatz, Milton M.
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Los Angeles	Siegel, David
Los Angeles	Tarica, Morris N.
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San Francisco	Friedman, Howard W.
San Francisco	Haun, Walter H.
San Francisco	Sabini, Richard J.
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Pueblo	Albo, Ralph C.
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Chicago	Goldberg, Arthur W.
Chicago	Goodfriend, Julian D.
Chicago	Grauer, Meyer
Chicago	Greene, Harry G.
Chicago	Grippo, Frank C.
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Oak Park	Krivanek, Frank J.
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Baltimore	Quitt, Leon E.

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Boston	Romanow, Irving
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Methuen	Farquhar, Andrew J.
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North Adams	Krizack, David
North Attleboro	Johnson, Paul R.
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Roxbury	Sudman, Saul M.
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Taunton	Cetlin, Norman M.

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Detroit	Peven, Louis
Detroit	Rossen, Jack
Detroit	Siegan, Sidney O.
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Minneapolis	Larson, Robert L.
Minneapolis	Neslund, Nels E.
Minneapolis	Seivert, William P.
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St. Paul	Haimes, Stanley
Sleepy Eye	Flor, Albert G.

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Newark	Rubin, Benjamin
Newark	Vernick, Norman
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Paterson	Varallo, Dominic V.
Perth Amboy	Seemann, Julius A.
River Edge	Cregan, John J.
River Edge	Silberg, Max M.
Riverton	Johnson, Elwood C.
Rutherford	Scott, Samuel
Spotswood	Epstein, Stanley E.
Trenton	Kantor, William H.
Union City	Levine, Arthur

New Mexico

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Las Cruces	Kennedy, John L.
Taos	Garcia, Eustaquio L.

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Ardsley	Marshall, Charles R.
Brocton	Spera, Charles A.
Bronx	Berck, Leo
Bronx	Chaikin, Jack
Bronx	Grossman, Hyman

Bronx	Kirschner, Samuel
Bronx	Miller, Harry R.
Bronx	Munves, Albert W.
Bronx	Sheingold, Herbert
Bronx	Wilbur, George H.
Bronx	Wittlin, Abraham
Brooklyn	Abramson, David
Brooklyn	Bergman, Sol A.
Brooklyn	Birbaum, Maurice
Brooklyn	Brustein, Milton W.
Brooklyn	Cohn, Joseph A.
Brooklyn	D'Ambrosio, Michael R.
Brooklyn	Feldman, Albert A.
Brooklyn	Fischer, Joseph A.
Brooklyn	Gelb, Melvin M.
Brooklyn	Geronemus, Clement
Brooklyn	Gittelson, Arthur M.
Brooklyn	Griesner, Martin
Brooklyn	Hackmyer, Francis F.
Brooklyn	Hershkowitz, Isidore M.
Brooklyn	Herskowitz, Harold
Brooklyn	Jaeger, Stanley
Brooklyn	Jaffee, Samuel
Brooklyn	Kantor, David
Brooklyn	Kasten, Matthew M.
Brooklyn	Kessler, Jerome
Brooklyn	Kresky, Leo S.
Brooklyn	Krimsky, Abraham M.
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Brooklyn	LaRocca, Thomas G.
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Brooklyn	Ludwig, Robert G.
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Brooklyn	Norman, Sidney
Brooklyn	Resnick, Arthur
Brooklyn	Rotheim, Richard H.
Brooklyn	Rubin, Rodney H.
Brooklyn	Rubinson, Solomon
Brooklyn	Safer, Harold J.
Brooklyn	Schulman, Leonard A.
Brooklyn	Schwartz, Bernard
Brooklyn	Senderowitz, Samuel
Brooklyn	Shevsky, Aaron Z.
Brooklyn	Siegel, Sylvan
Brooklyn	Sprinzen, Louis
Brooklyn	Sunnenblick, Martin G.
Brooklyn	Tames, Sidney L.
Brooklyn	Tash, Irving
Brooklyn	Tillis, Bernard
Brooklyn	Trakas, George N.
Brooklyn	Weine, George W.
Brooklyn	Zaveloff, Abraham
Buffalo	Chiappone, Salvator J.
Buffalo	Gabbey, Arnold R.
Buffalo	Grader, George F.
Buffalo	Petralia, Joseph A.
Corona	Bogart, Jack
Crompond	Price, Nathaniel W.
Fairport	DoVideo, Michael E.
Flushing	Schnur, Leon
Forest Hills	Kantor, Jack
Forest Hills	Kellner, Robert L.
Freeport	Samet, Morton
Glens Falls	Colb, Sidney M.
Hartsdale	Rodin, Daniel
Jamaica	Georgiade, Nicholas G.
Jamaica	Stettner, Herman
Kings	Fleisher, Daniel
Lake Success	Marino, James V.
Long Island	Bisignani, Vincent F.
Long Island	Forrest, Lawrence E.
Long Island	Gale, Robert
Long Island	Rosenblatt, Richard L.
Middletown	Imholz, Berchman J.
Mt. Vernon	Perlman, Daniel J.
Newfane	Orlando, Joseph D.
New Paltz	Langwick, Arnold
New Rochelle	Abrams, Norman J.
New York	Birbaum, Louis
New York	Chernow, Louis
New York	Crowley, Robert E.
New York	Dickes, Stanley B.
New York	Epstein, Edward A.
New York	Epstein, Samuel B.
New York	Erlich, Harold N.
New York	Essig, Henry
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New York	Feigenbaum, Harold
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New York	Gottfried, Herbert C.
New York	Gottsegen, Robert
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New York	Kahan, Boris S.
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New York	Koffman, Morris D.
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New York	Mendelson, Max
New York	Pine, Ben
New York	Rubin, Benjamin
New York	Scheck, Raymond
New York	Schoeneman, Bertram B.
New York	Siegel, Arthur B.
New York	Slevin, James F.
New York	Stodel, Burton
New York	Tannenbaum, David
Ozone Park	Karmiol, Lawrence
Plattsburg	Graves, Robert H.
Poughkeepsie	Katz, Morris
Richmond	Scheinberg, Emil M.
Rochester	Stevenson, Willard J.
St. Albans	Reilly, John T., Jr.
Schenectady	Isabella, Ennio
Springville	Schweizer, Jack O.
Staten Island	Hughes, Charles H., Jr.
Troy	Lanzillo, Frank A.

North Carolina

Asheboro	Crutchfield, James G.
Bethel	Harris, Franklin G.
Gastonia	Moser, James E.
Gastonia	Rhyne, Howard S.
Greensboro	Whittington, Perry B., Jr.
Lumberton	King, David D.
Raleigh	Finch, Robert E.
Salisbury	Pratt, Franklin P.
Varina	Adcock, George W., Jr.
Wilson	Grady, Leland V., Jr.

North Dakota

Cando	Widmeyer, David L.
Powers Lake	Riley, Ross J.
Tappen	McKee, Dennis P.

Ohio

Canton	Scholnik, Lee M.
Cincinnati	Niederhofer, Merle A.
Cincinnati	Pappas, Gus C.
Cincinnati	Rigberg, Albert E.
Cincinnati	Stingley, Charles T.
Cleveland	Andrassy, Julian J.
Cleveland	Canepa, Vincent C.
Cleveland	Schack, Julian B.
Cleveland	Schenker, Joseph D.
Cleveland	Stewart, Albert
Cleveland	Szubski, Chester S.
Cleveland Heights	Roth, Joseph
Cleveland Heights	Schloss, William L.
Columbus	Ashleman, William E.
Columbus	Heintz, William D.
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Fostoria	Karmasim, Morris H.
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Oklahoma City	Sherrad, Howard B.

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Philadelphia	Giordano, James A.
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Philadelphia	Irwin, Robert
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Philadelphia	Jenoff, Herbert M.
Philadelphia	Kanev, Phillip S.
Philadelphia	Kerr, Irving L.
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Philadelphia	Nathanson, Emanuel
Philadelphia	Shanken, Jack E.
Philadelphia	Sidlick, Leonard
Philadelphia	Sorkin, Morris E.
Pittsburgh	Ardolino. August D.
Pittsburgh	Mahaffey, Robert W.
Pittsburgh	Robin, Gilbert N.
Pittsburgh	Weaver, Leslie E.
Pittsburgh	Wilden, Samuel J.
Ranshaw	Kotanchik, Metro J.
Reading	Geiger, David P.
Reinerton	Behney, Norton L.
Sheffield	Schramm, Louis H.
Stroudsburg	Dening, Elton J.
Uniontown	Mason, William S.
Wilkinsburg	Hunzkier, John S.

Rhode Island

Central Falls	Aissis, Thomas M.
Providence	Barsamian, Samuel
Providence	Dilibero, Joseph L.
Newport	Commette, Francis M.

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Columbia	Brooks, Aubrey E.
Sumter	Upshur, Thomas T.

South Dakota

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Tennessee

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Memphis	Brown, Davis L.
Memphis	Zangwill, Morris H.

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Ft. Worth	Richardson. James J., Jr
Ft. Worth	Rodriguez, Philip P.
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Houston	Hunsaker, Horace D.
Houston	Lee, John C.
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Terrell	Tinsley, K. C.
Waco	Nicosia. Ralph I.

Utah

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Vermont

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Waterbury	Kennedy, Robert F.

Washington

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Seattle	Westin. Ralph W.
Seattle	Young, Harrison E.
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Spokane	Grant, Joshua F.

West Virginia

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Kingwood	Beerbower. Fred V.
Powellton	Hawkins. Robert L.

Wisconsin

Crandon	Kendall, Martin P.
Milwaukee	Foy, Harold E.
Milwaukee	Kuehn. Richard H.
Oshkosh	Schneider, Gordon B.
Stevens Point	Mannis, I. Robert

DEATHS

Akers, Daniel B., Peterstown, W. Va.; died March 1.

Beacham, Earl D., Circleville, Pa., School of Dentistry, University of Pittsburgh, 1914; died February 5; aged 56.

Beasley, Gay, Coulee Dam, Wash.; died February 16; aged 49.

Boozer, John H., Washington, D. C.; died February 4; aged 84.

Braendle, Samuel E., Grand Rapids, Mich.; School of Dentistry and the Baltimore College of Dental Surgery, University of Maryland, 1892; died February 17; aged 78.

Breitenstein, George W., Springfield, Mo.; School of Dentistry, St. Louis University, 1924; died February 6; aged 45.

Brock, T. C., Louisville, Ky.; died January 9; aged 54.

Burke, George F., Detroit; College of Dental Surgery, University of Michigan, 1896; died in January.

Burt, John D., New York; Baltimore College of Dental Surgery, 1902; died February 14; aged 70.

Carr, Constantine S., Augusta, Ga.; Meharry Dental College, Dental Department of Meharry Medical College, 1909; died February 8.

Chaney, Henry M., London, Ohio; Ohio College of Dental Surgery, 1892; died February 5; aged 75.

Chapin, Leonard B., Columbus, Ohio; College of Dental Surgery, University of Michigan, 1905; died February 9; aged 64.

Coons, Norton D., Aberdeen, Wash.; College of Dental Surgery, University of Michigan, 1900; died January 19; aged 72.

Crumbley, J. T., Colquitt, Ga.; died February 6; aged 44.

Dai, David S., Chengtu, China; died in December.

Davidson, Albert, Holdrege, Neb.; Dental School, Northwestern University, 1899; died February 15; aged 81.

Davidson, Jim S., Charleston, W. Va.; died January 17.

Davis, John E., Columbus, Ohio; College of Dentistry, Indiana University, 1931; died March 3.

Derby, Harry C., Ellenville, N. Y.; New York College of Dentistry, 1892; died February 9; aged 85.

Dershem, Herbert L., Xenia, Ohio; died January 19; aged 52.

Dratz, Ferdinand G., Missoula, Mont.; University of Michigan, 1916; died February 9; aged 57.

Eckler, Harry F., Rochester, N. Y.; School of Dentistry, University of Buffalo, 1905; died November 15; aged 64.

Elder, Clifford P., Atchison, Kan.; Kansas City Dental College, 1905; died February 7; aged 66.

Fording, James D., Brooklyn; School of Dentistry and the Baltimore College of Dental Surgery, University of Maryland, 1903; died February 18.

Francis, Harley E., Toledo, Ohio; School of Dentistry, Western Reserve University, 1908; died February 16; aged 62.

Francis, John F., Washington D. C.; School of Dentistry, University of Pennsylvania, 1906; died February 12; aged 62.

Green, A. Milton, Philadelphia; School of Dentistry, Temple University, 1907; died February 6; aged 63.

Greene, Merton H., Concord, N. H.; Dental School, Harvard University, 1906; died February 14; aged 65.

Henley, Thomas S., Inverness, Fla.; died February 20; aged 84.

Hertz, E. F., Portland, Ore.; University of Minnesota, 1899; died February 18; aged 80.

Hoffman, John S., Charlotte, N. C.; Atlanta Dental College, 1909; died February 18; aged 64.

Holden, Stanley R., Duluth, Minn.; College of Dental Surgery, University of Michigan, 1883; died February 4; aged 86.

Iden, Eugene W., Cleveland; College of Dentistry, Ohio Medical University, 1899; died February 25; aged 77.

Kelly, James M., Wilkes-Barre, Pa.; died February 5; aged 52.

Kelly, Walter A., Milwaukee; School of Dentistry, Marquette University, 1919; died February 2; aged 53.

Lavengood, John C., South Bend, Ind.; School of Dentistry, Indiana University, 1906; died January 29; aged 62.

Leech, Chester R., Wayzata, Minn.; College of Dentistry, State University of Iowa, 1907; died February 2; aged 61.

Leland, Henry, Gardner, Mass.; Dental School, Tufts College, 1901; died January 25; aged 66.

Linkenbach, Edward E., Columbus, Ohio; College of Dentistry, Ohio State University, 1910; died October 28.

McInnes, George F., Belmont, Mass.; Dental School, Tufts College, 1904; died February 2; aged 65.

Mayer, Harry, Newark, N. J.; died February 18; aged 67.

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Hospital Dental Service: W. Harry Archer, Professional Bldg., Pittsburgh, Pa.

Operative Dentistry, Materia Medica and Therapeutics: J. Bernard Hutcherson, Starks Bldg., Louisville, Ky.

Oral Surgery, Exodontia and Anesthesia: George W. Christiansen, David Whitney Bldg., Detroit, Mich.

Orthodontics: L. B. Higley, 705 S. Summit St., Iowa City, Iowa.

Partial Denture Prosthesis: Oliver C. Applegate, 216 S. State St., Ann Arbor, Mich.

Periodontia: Hunter S. Allen, Comer Bldg., Birmingham, Ala.

Practice Management: Gaylord J. James, 9400 Euclid Ave., Cleveland, Ohio.

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ANNOUNCEMENTS

MEETINGS OF STATE SOCIETIES

State	Date	Place	Secretary	Address
Alabama			G. W. Matthews	1922 Tenth Ave., S., Birmingham 5
Arizona	May 1–3	Tucson	B. K. Litt	68 E. Congress, Tucson
Arkansas	May 19–21	Little Rock	I. M. Sternberg	Merchants Bank Bldg., Ft. Smith
California			L. E. Linehan	450 Sutter St., San Francisco
S. California	Sept. 15–17	Los Angeles	M. E. Ralston	903 Crenshaw Blvd., Los Angeles 6
Colorado	May 25–28	Colorado Springs	R. A. Downs	724 Republic Bldg., Denver 2
Connecticut	June 3–5	New London	E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware			J. Krygier	309 S. State St., Dover
D. of Columbia	June 10	Washington	K. H. Wood	202-1835 Eye St., N.W., Washington
Florida	Nov. 10–12	St. Petersburg	J. I. Todd	433 St. James Bldg., Jacksonville
Georgia			J. M. Heard, Jr.	Persons Bldg., Macon
Hawaii	October	Honolulu	J. H. Dawe	P. O. Box 39, Honolulu 10
Idaho	June 9–11	Sun Valley	H. F. Miller	Moscow
Illinois	Oct. 9–11	Peoria	P. W. Clopper	623 Jefferson Bldg., Peoria 2
Indiana	May 19–21	Indianapolis	E. E. Ewbank	Kingman
Iowa	May 6–8	Des Moines	A. N. Humiston	417 Higley Bldg., Cedar Rapids
Kansas	May 12–15	Kansas City, Mo.	F. A. Richmond	1008 Huron Bldg., Kansas City
Kentucky			J. L. Walker	640 Barbee Way, S., Louisville
Louisiana			J. S. Bernhard	407 Medical Arts Bldg., Shreveport
Maine	June 5–7	Poland Springs	A. H. Garcelon	State House, Augusta
Maryland			J. H. Shackelford	706 Baltimore Life Bldg., Baltimore 1
Massachusetts	May 5–8	Boston	P. E. Adams	106 Marlborough St., Boston
Michigan			F. Wertheimer	Michigan Department of Health, Lansing
Minnesota	Feb. 23-25, 1948	St. Paul	L. M. Cruttenden	Lowry Medical Arts Bldg., St. Paul
Mississippi	June 1–4	Biloxi	O. L. Colee	Magnolia
Missouri	May 12–15	Kansas City	C. W. Digges	Exchange National Bank Bldg., Columbia
Montana	May 1–3	Missoula	C. S. Renouard	305 Phoenix Bldg., Butte
Nebraska	May 12–14	Lincoln	F. A. Pierson	Federal Securities Bldg., Lincoln
Nevada	May 12-13	Las Vegas	L. G. Jacob	505 Chestnut St., Reno
New Hampshire	June 15–17	Portsmouth	F. E. Williams	814 Elm St., Manchester
New Jersey			J. G. Carr	407 Cooper St., Camden
New Mexico	May 26–28	Santa Fe	J. S. Eilar	First National Bank Bldg., Albuquerque
New York	May 13–16	Buffalo	G. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina	May 4–7	Pinehurst	G. W. Sanders	Benson
North Dakota	May 12–14	Grand Forks	K. G. Allen	Fargo
Ohio	Nov. 9–12	Cleveland	E. G. Jones	185 E. State St., Columbus
Oklahoma			E. W. Wise	Medical Arts Bldg., Tulsa
Oregon	June 5–7	Portland	W. H. Hurley	922 Selling Bldg., Portland 5
Panama Canal Z.			T. W. Cagle	Box 243, Cocoli
Pennsylvania	May 6–8	Philadelphia	E. R. Aston	421 Market St., Kingston
Philippine I.			G. A. Carreon	9 Broadway, Third St., N. Manila
Puerto Rico			R. Miranda	Box 747, Rio Piedras
Rhode Island			M. B. Messore	707 Union Trust Bldg., Providence
South Carolina			J. R. Owings	Greenville
South Dakota	May 29–31	Black Hills	E. W. Elmen	Sioux Falls
Tennessee	May 12–15	Nashville	E. J. Justis	Exchange Bldg., Memphis
Texas	April 28–May 1	San Antonio	W. Ogle	313 Medical Arts Bldg., Dallas
Utah	June 5–7	Ogden	S. Ballinger	401 Medical Arts Bldg., Salt Lake City
Vermont	May 25–27	Woodstock	J. A. Larrow	Middlebury
Virginia			J. E. John	804 Medical Arts Bldg., Roanoke
Washington	May 5–7	Spokane	F. J. Dingle	1502 Medical & Dental Bldg., Seattle 1
West Virginia	May 19–21	Bluefield	C. J. Gavelda	Clarksburg
Wisconsin			K. F. Crane	1233 Bankers Bldg., Milwaukee 2
Wyoming	June 19–21	Casper	J. D. McNiff	208 Grand Ave., Laramie

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Alabama	June 23–27	Birmingham	M. W. Gaillard	Merchants Bank Bldg., Mobile
Arizona‡	June 25–28	Phoenix	R. K. Trueblood	25 N. Second Ave., Glendale
Arkansas	June 23	Little Rock	H. E. Hanna	National Bank of Commerce Bldg., El Dorado
California	June 16 July 14	Los Angeles San Francisco	K. I. Nesbitt	515 Van Ness Ave., San Francisco 2
Colorado	June 15–19	Denver	E. G. Netherton	724 Republic Bldg., Denver 2
Connecticut	June 17–21	Hartford	C. G. Brooks	New London
Delaware	June 25–27	Wilmington	P. K. Musselman	Newark
D. of Columbia	June 9	Washington	H. A. Swanson	1726 Eye St., N.W., Washington
Florida	June 30–July 3	Jacksonville	A. W. Kellner	P. O. Box 155, Hollywood
Illinois	June 24–27	Chicago	W. A. McKee	503 Wood Bldg., Benton
Indiana	June 16–19	Indianapolis	C. A. Frech	Gary National Bank Bldg., Gary
Kansas	June 2–5	Kansas City, Mo.	G. L. Teall	Box 71, Hiawatha
Maryland	June 9–11	Baltimore	K. W. Preis	700 Cathedral St., Baltimore 1
Michigan	June 16	Detroit	J. L. Champagne	502 David Whitney Bldg., Detroit 26
Minnesota	June 16-21	Minneapolis	E. E. Comartin	334-100 First Avenue Bldg., Rochester
Mississippi	June 17–19	Jackson	W. R. Madden	Forest
Missouri	June 2–7 June 4–7	Kansas City St. Louis	R. R. Rhoades	Central Trust Bldg., Jefferson City
Nebraska	June 9–12	Omaha	C. A. Bumstead	924 Stuart Bldg., Lincoln
New Jersey	June 9–13		W. A. Wilson	150 E. State St., Trenton 8
North Carolina	June 23	Raleigh	F. O. Alford	Charlotte
North Dakota	July 6-11	Fargo	W. J. Ford	Fargo
Ohio	June 16–21*	Cleveland	E. D. Lowry	79 E. State St., Columbus
Pennsylvania	June 23–28†	Philadelphia and Pittsburgh	R.E.V. Miller	Northampton National Bank Bldg., Easton
South Carolina	July 7	Columbia	E. G. Bumgardner	1517 Hampton St., Columbus 29
South Dakota	June 22–26	Sioux Falls	T. E. Burrington	Box 5, Rapid City
Tennessee	June 9–13	Memphis	J. J. Vaughn	1001 Medical Arts Bldg., Nashville
Texas	May 4–9	Houston	C. C. Hardin, Jr.	311 Capitol National Bank Bldg., Austin
Utah	June 5–7	Ogden	S. W. Gallinger	1001 Tribune Telegram Bldg., Salt Lake City
Vermont	June 23–25	Montpelier	C. I. Taggart	139 Bank St., Burlington
Virginia	June 18–21	Richmond	J. M. Hughes	715 Medical Arts Bldg., Richmond
West Virginia	June 23–26	West Liberty	R. H. Davis	510 Goff Bldg., Clarksburg
Wisconsin	June 9–13	Milwaukee	S. F. Donovan	Tomah
Wyoming	June 23	Casper	O. R. Docekal	Sheridan

*Practical, June 16-18 (dental); June 17 (hygienists).
Theory, June 19-21.
†Written, June 23-25 (dental); June 24-25 (hygienists).
Clinical, June 26-28 (dental); June 26 (hygienists).

OTHER MEETINGS

Name	Date	City	Secy. or Chm.	Address
American Academy of Dental Medicine, First Annual Meeting	June 15	New York	S. Sorrin Program Chm.	745 Fifth Ave., New York 33
American Academy of Periodontology, Twenty-Ninth Annual Meeting	July 31–Aug. 2	Boston	C. E. Chamberlain Secy.	633 Jefferson Bldg., Peoria, Ill.
American Association o Dental Schools	June 23–25	Chicago	J. E. Buhler Secy.	School of Dentistry, Temple University, Philadelphia 30
American Association of Industrial Dentists	April 30–May 1	Buffalo	L. D. Heacock Secy.	Industrial Hygiene Division, National Institute of Health, Washington 14
American Board of Oral Surgery	July 29–30*	Boston	L. M. FitzGerald Secy.	718 Roshek Bldg., Dubuque, Iowa
American Dental Assistants Association	Aug. 4–7	Boston	A. M. Ferguson	709 Centre St., Jamaica Plain, Mass.
American Dental Association	Aug. 4–8	Boston	H. Hillenbrand Secy.	222 E. Superior St., Chicago

*Examination for certification.

Name	Date	City	Secy. or Chm.	Address
American Dental Hygienists' Association	Aug. 4–8	Boston	A. R. Fisk Secy.	1704 N. Troy St., Arlington, Va.
American Dental Society of Europe	Aug. 1948	London	K. C. Campbell Secy.	88 Portland Place, London, W. 1.
American Medical Association, Centennial	June 9–13	Atlantic City, N. J.	O. F. Lull Secy.	535 N. Dearborn St. Chicago 10
American Society of Oral Surgeons, Twenty-Ninth Annual Meeting	July 30–Aug. 2	Boston	H. Bear Secy.	1112 E. Clay St., Richmond 19, Va.
National Dental Association, Thirty-Fourth Annual Meeting	Aug. 11–15	Detroit	J. A. Jackson Secy.	Box 197, Charlottesville, Va.
Ontario Dental Association, Eightieth Meeting	May 19–21	Toronto	H. R. Skilling Publicity Chm.	86 Bloor St., West Toronto 5, Ont., Canada
Northwest Conference in Dental Medicine	May 18–21	Harrison Hot Springs, B. C.	C. R. Hallman Secy.	4298 Dunbar St., Vancouver, B. C., Canada
Alpha Omega Fraternity, National Council, Annual Spring Meeting	May 3–4	Washington	B. E. Gruber Secy.	147 W. 42nd St., New York 18
International Association of Dental Research	June 21–22	Chicago	E. H. Hatton Secy.	School of Dentistry, Northwestern University, 311 E. Chicago Ave., Chicago
Academy of Denture Prosthetics	July 28–Aug. 3	Boston	I. L. Furnas Secy.	928 Silverado St., La Jolla, Calif.
Dental Hygienists' Association of the City of New York	May 2	New York	E. Jaeffa Publicity Chm.	265 W. 94th St., New York
Cleveland Dental Society, Annual Spring Clinic Meeting	May 5–7	Cleveland	W. J. Benson Publicity Chm.	Keith Bldg., Cleveland
Medical Library Association, Forty-Sixth Annual Meeting	May 27–29	Cleveland	Ada L. Floyd Chm.	Cleveland Medical Library Association, 11000 Euclid Ave., Cleveland 6
University of Pennsylvania, Dental Alumni Society	May 23	Philadelphia	Z. T. Jackaway Secy.	1506 E. Susquehanna Ave. Philadelphia 25
Wisconsin Dental Economic Study Club	Aug. 29–30	Madison	M. M. Tuttle Secy.	20 N. Carroll St., Madison 3

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Delaware Hospital, Inc., Wilmington. Medical Director, Delaware Hospital, 501 W. Fourteenth St., Wilmington 13.

Eastman Dental Dispensary, Rochester, N. Y.

Fellowships for Research and Graduate Work in the Dental Sciences, University of Rochester. Dean, George H. Whipple.

The Forsyth Dental Infirmary for Children. Director, Percy R. Howe, 140 The Fenway, Boston.

International Grenfell Association. Staff Selection Committee, 156 Fifth Ave., New York.

Jewish Sanitarium and Hospital for Chronic Diseases. Director, Leonard Kohn, Dental Division, E. Forty-Ninth St. and Rutland Road, Brooklyn 3, N. Y.

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Notre Dame Bay Memorial Hospital, Twillingate, Newfoundland. Address John M. Konopka, 25 W. Independence St., Shamokin, Pa.

Richmond Freeman Memorial Clinic for Infants and Children, Dallas, Texas. Executive Director, Dora B. Foster, 3617 Maple Ave., Dallas.

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University of Illinois, College of Dentistry. Isaac Schour, College of Dentistry, University of Illinois, 808 S. Wood St., Chicago 12.

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